

APRIL 2023

Trash Assessment Implementation Plan



INTEGRATED STORMWATER MANAGEMENT
LEADING THE WAY
Caltrans

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Attachment A:
Sample of Assessment and STGA Map

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Draft Trash Discharge Design Study



1.0 Introduction/Regulatory Background

1.1 Purpose

The purpose of this Trash Assessment Implementation Plan (herein referred as Plan) is to describe the California Department of Transportation's (Caltrans) implementation approach to comply Attachment E Section E.9 requirements of the Caltrans National Pollutant Discharge Elimination System (NPDES) Statewide Stormwater Permit (Order) adopted on June 22, 2022. The Plan will identify Significant Trash Generating Areas (STGAs) within Caltrans' right-of-way (ROW) that have the potential to discharge to receiving waters, establish baseline trash generation, demonstrate full capture equivalency, and measure annual trash reduction per year. Please note that this Plan uses the terms "urbanized" and "municipal" synonymously.

1.2 Statewide Trash Provisions

The Trash Provisions became effective on December 2, 2015 and prohibit the discharge of trash to receiving waters. Throughout the state, trash is typically generated on land and transported to surface waters primarily through stormwater discharges.

[1]The Final Trash Amendments defines a Full Trash Capture System as "a treatment control, or series of treatment controls including but not limited to a multi-benefit project or a low-impact development control that traps all particles that are 5 mm or greater and has a design treatment capacity that is either: a) of not less than the peak flow rate, Q, resulting from a one-year, one-hour storm in the subdrainage area, or b) appropriately sized to, and designed to carry at least the same flows as the corresponding storm drain."

Permittees are required to identify STGAs within their jurisdictions and effectively prevent trash discharges from those areas by selecting from the following compliance "Track" options:

Track 1: Installation of full trash capture systems[1] in all STGAs.

Track 2: Implementation of any combination of controls that achieves the equivalent level of trash removal as full trash capture devices, also referred as full trash capture equivalency.

The Trash Provisions require Caltrans to comply with Track 2 in which Caltrans must install and implement a combination of full capture systems, institutional controls, other treatment controls, and/or multi-benefit projects.

1.3 Los Angeles Region Trash TMDLs

The Order includes the implementation requirements for the TMDLs in which Caltrans has been identified as a responsible party by the Los Angeles Regional Water Board. These are:

- **Ballona Creek**
- **Legg Lake**
- **Los Angeles Area (Echo Park Lake)**
- **Los Angeles Area (Peck Road Park Lake)**
- **Los Angeles River**
- **Machado Lake**
- **Malibu Creek**
- **Revolon Slough and Beardsley Wash**
- **Santa Monica Bay**
- **Ventura River Estuary**

Trash reduction allocations are the gallons of trash per year that Caltrans will remove or reduce from its stormwater discharges to satisfy its trash TMDLs. TMDL compliance progress is updated in the Caltrans Annual TMDL Compliance Status Report, which is submitted as an attachment to its Annual Report. An existing trash reduction program is in place to address the 474 centerline miles associated with TMDLs. Therefore, those areas are not included in this Plan.

1.4 San Francisco Bay Region Trash Discharge Reduction

An extensive trash reduction effort is underway in the nine Bay Area counties in response to the San Francisco Region Water Quality Control Board (SF RWQCB) Trash Discharge Cease-and-Desist Order No. R2-2019-0007 (CDO) .

To date, Caltrans has undertaken extensive steps to reduce trash in the SF RWQCB including:

- **Conducting trash reduction feasibility studies;**
- **Programming and implementing trash control State Highway Operations and Protection Program (SHOPP) projects on Caltrans ROW and in partnership with municipalities;**
- **Funding cooperative e local agency projects that address trash in Caltrans and local agency ROW;**
- **Performing institutional trash control measures such as street sweeping, litter pickups, illegal dumping and encampment cleanups, and vegetation controls; and**
- **Implementing public education and outreach programs.**

The CDO establishes trash reduction compliance benchmarks for the 1,036 centerline miles subject to the CDO. The CDO mandates annual reports be submitted to the SF RWQCB. Caltrans has developed a Trash Control Implementation Workplan to comply with the trash reduction program required by the CDO. Therefore, those areas are not included in this Plan.

1.5 Caltrans NPDES Order

The Order replaced the previous Order 2012-0011-DWQ and became effective January 1, 2023. The Order regulates stormwater and non-stormwater discharges from Caltrans' ROW. The Order contains existing total maximum daily loads (TMDL) adopted by the Los Angeles Regional Water Board and enforces required trash reduction measures in significant trash generating areas as required by the San Francisco Bay Regional Water Board in its February 19, 2019 Cease and Desist Order. The Plan excludes these on-going activities.

Table 1.1: Plan Sections and Attachment E NPDES Order References

Attachment E Order Reference	Order Requirement Description	Plan Section
E9.1	Assessment within MS4	Section 4.0: Urban MS4 Assessment
E9.2.a	Implementation Schedule	Section 3.0: Trash Assessment Schedule
E.9.2.b	GIS Mapping of STGAs	Section 2.5: Geospatial Information System (GIS) STGA Mapping
E.9.2.c	Full Trash Capture Equivalency	Section 8.0: Full Trash Capture Equivalency
E.9.2.d	Compliance with interim Milestones	Section 9.0: Interim Trash Reduction Milestones
E.9.2.e	Annual Trash Reduction	Section 11.0: Annual Trash Reduction
E.9.3.a	Assessment Outside of MS4	Section 6.0: Rural ROW Trash Assessment
E.9.3.b	Assessment within MS4	Section 4.0 Urban MS4 Assessment
E.9.3.c	Homelessness	Section 7.2 Homeless Encampments Section 7.3 Point in Time Count
E.9.3.d	Substitute for visual assessment	Section 6.1 Low Trash Rating Threshold Section 8.3 Trash Discharge Study – Urbanized ROW Section 8.4 Trash Discharge Study – Rural ROW
E9.3.e	Locations where substitutes for visual assessment performed	Section 6.0 Rural ROW Trash Assessment
E9.4	Baseline Assessment Volume Results	Section 9.0: Baseline Assessment Trash Volume

2.0 Trash Assessment Inventory

The Caltrans ROW includes over 15,127 centerline miles. Due to the magnitude of Caltrans ROW requiring trash assessment, Caltrans is implementing a phased approach that prioritizes trash assessment of first the urban MS4 ROW, and then the rural ROWs.

2.1 Caltrans Jurisdictional Profile

Caltrans is responsible for maintaining California's state highway system which includes 15,127 centerline miles of highway. In response to the State Water Board's 2017 13383 Order, Caltrans assessed 711 centerline miles in urbanized areas and reported the results in its 2019 Trash Assessment. This Plan provides the steps and schedule to assess the 12,906 centerline miles of Caltrans ROW that were not included in its previous 2019 Plan Trash Assessment. As required by Attachment E Section E.9 of the Order, this Plan provides the trash assessment methods that will be used to determine the amount of significant trash generating areas (STGAs) in the remaining urban and rural areas not previously assess in 2019 Trash Assessment.

Table 2.1 summarizes the Caltrans centerline miles.

Table 2.1: Caltrans Highway System Breakdown within Urban and Rural

Caltrans Jurisdictional Inventory	
Description	Centerline Miles
Urban	2,685
Rural Areas within MS4	138
Rural Areas outside of MS4	10,794
Exempt Urban CDO Areas in San Francisco Oakland Bay Area (Caltrans District 4)	1,036
Exempt Urban TMDL Areas in Los Angeles Area (Caltrans District 7)	474
Total	**15,127**

2.2 Existing STGA Inventory

The Caltrans 2019 Trash Assessment assessed 9,066 acres within 711 highly urbanized centerline miles, 13,405 acres of ramps, 159 acres of Park and Rides, and 61 acres of Rest Areas to determine STGAs using the State Water Board sponsored On-Land Visual Trash Assessment (OVTA) methodology. As allowed by the Trash Provisions, desktop methods were applied to rural ROW. Based upon a misunderstanding, Caltrans applied the desktop methods to non-dense urbanized ROW which resulted in non-assessment of that ROW. As required by the Order, non-rural urbanized ROW will be assessed, and rural ROW is to be re-assessed in accordance with this approved Trash Assessment Methodology.

2.3 Re-Assessment of Prior Identified STGAs

Prior to deployment of any new or enhanced trash treatment controls for STGAs identified as part of the 2019 Trash Assessment, each Caltrans District maintenance manager will visit the STGA to visually assess the current trash loading to ensure the trash treatment controls are appropriately sized and/or implemented, and to determine an appropriate maintenance inspection and cleaning schedule.

Table 2.2: District STGA Acreage by Asset

District	Highway Acreage	Ramp Acreage	Park and Ride Acreage	Rest Area Acreage	Total Acreage
1	0	94	0	0	94
2	0	561	0	0	561
3	1,110	1,293	17	0	2,419
4	24	9	7	0	40
5	366	1,505	2	0	1,872
6	75	757	1	0	833
7	951	1420	69	0	2,440
8	3,061	3,485	36	12	6,594
9	0	0	0	0	0
10	340	536	1	21	898
11	1,909	2,116	21	28	4,074
12	1,231	1,633	5	0	2,869
Totals	**9,066**	**13,405**	**159**	**61**	**22,691**

2.4 Current STGA Trash Rating by District

The 2019 Trash Assessment resulted in the following STGA trash ratings in each District as provided in Table 2.3.

Table 2.3: STGA Acreage Rating Breakdown

District	Very High	High	Moderate	Low	Unrated Urban	Unrated Rural	Total Acreage
1	0	0	94	136	0	9,696	9,925
2	0	0	561	340	802	14,837	16,540
3	24	1,919	476	2,400	1,963	12,476	19,258
4	0	31	9	1,280	1,392	2,750	5,461
5	0	752	1,120	404	3,546	8,569	14,391
6	0	144	689	1,318	4,009	17,697	23,856
7	0	1,893	547	559	7,586	3,356	13,940
8	25	4,382	2,187	734	5,467	14,458	27,252
9	0	0	0	0	0	6,683	6,683
10	14	774	111	621	2,925	10,371	14,815
11	33	3,799	242	888	5,763	6,980	17,704
12	41	2,615	213	213	4,473	29	7,583
Total	**137**	**16,308**	**6,246**	**8,891**	**37,926**	**107,900**	**177,409**

2.5 Geospatial Information System (GIS) STGA Mapping

GIS connects data to a map, integrating location data (where things are) with all types of descriptive information (what things are like there). This provides a foundation for mapping and analysis that is used in science in almost every industry. GIS helps users understand patterns, relationships, and geographic context. The benefits include improved communication and efficiency as well as better management and decision making.

As required by the Order and explained below, Caltrans will conduct trash assessment on urbanized ROW not included in its 2019 Trash Assessment and re-assessment of its rural ROW. The GIS maps will be updated with the results of these assessments. Areas pending assessment are identified in blue linework. Attachment A are examples of 2019 maps presenting the ROW with completed trash assessments and associated Low, Moderate, High, and Very High trash ratings. The attachments also include what future maps would look like for rural ROW. These maps will be available for view by accessing the web viewer at the following URL: https://bit.ly/atamwebmap.

The Headquarters Division of Environmental Analysis GIS unit serves as Caltrans focal point for GIS software deployment, acquisition and maintenance of geospatial data and imagery, web map service deployment, and GIS technical support.

The GIS unit is comprised of GIS professionals with a wide array of knowledge and expertise to support the following initiatives:

- **Geospatial data and aerial imagery acquisition and delivery**
- **GIS data library maintenance**
- **Software technology and data integration with CADD applications**
- **GIS analysis and mapping to support capital project delivery**
- **Development of models, tools, and scripts to support work-flow automation**
- **Web mapping solutions**
- **Technical support for statewide GIS users**
- **Develop and maintain partnerships within the GIS community**

As assessments are completed, STGAs will be populated on a GIS layer that will include the following features:

- **County**
- **Route**
- **Post miles**
- **Route shields**
- **Interchange area**
- **Areas under raised roads**
- **Safety roadside rest areas**
- **MS4 hatching**
- **Regional board boundaries**
- **Caltrans District boundaries**
- **Receiving water bodies**
- **Storm drain network (if available)**
- **Environmentally sensitive areas**
- **CalEnviro screen 4.0**
- **Trash ratings**
  - **very high = purple line work**
  - **high = red line work**
  - **moderate = yellow line work**
  - **low = green line work**
  - **pending assessment = blue**

GIS technology is of limited value without the people who manage the system and develop plans for applying it to real world problems. GIS users range from technical specialists who design and maintain the system to those who use it to help them perform their everyday work.

Before trash assessment data can be used in a GIS, the data from field assessments must be converted into a suitable digital format. The process of converting data from field determinations into computer files is called digitizing.

Caltrans will manage and oversee fieldwork, database creation, attribute data collection, map creation, and symbology.

Upon completion of its trash assessment efforts, Caltrans will update its trash assessment GIS database and develop a revised Trash Assessment Map per requirements in E.10 of the Order. Caltrans plans to use internal and consultant GIS support staff to develop, update, and maintain its trash compliance GIS databases, maps, and compliance reporting tools.

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3.0 Trash Assessment Schedule

The Order requires Caltrans to conduct trash assessment following the OVTA methodology and/or develop an alternative methodology subject to approval. The OVTA methodology was developed for municipal areas and not for Caltrans ROW which includes high traffic volume urban ROW, rural ROW, and other unique features. However, Caltrans will employ the OVTA within municipal ROW and the desktop method within rural ROW to identify STGAs. The following describes Caltrans trash assessment schedule for measuring trash accumulation in a geographically defined assessment ROW. The protocols and methods identified herein are consistent with the requirements of the Order.

Table 3.1: Trash Assessment Implementation Schedule

Caltrans Trash Assessment Implementation Schedule				
Phase	Start	End	Assessment Area	Assessment Method
I	2018	2019	Urban ROW	OVTA
II	5/1/2023	12/31/2023	Remaining MS4 ROW	OVTA
III	5/1/2023	10/31/2023	Rural ROW	Trash Portal Dashboard
IV	11/1/2023	5/1/2024	STGAs in Rural ROW	Modified OVTA



4.0 Urban Assessment Criteria

The Order requires Caltrans to visually assess all ROW within or adjacent to any regulated MS4 (Phase I and Phase II Permittee jurisdictions) to identify STGAs. Caltrans will use the OVTA trash assessment rating as displayed in Table 4.1.

Table 4.1: OVTA Ratings

OVTA Rating	Criteria Description
Low – Not Littered	• Effectively no trash is observed in the assessment area. • Approximately less than one piece per two car lengths on average. • There may be some small pieces in the area, but they are not obvious at first glance. • One individual could easily clean up all trash observed in a very short timeframe.
Moderate – Slightly Littered	• Predominantly free of trash except for a few littered areas. • On average, one piece per two car lengths. • The trash could be collected by one or two individuals in a short period of time.
High – Littered	• Predominantly littered except for a few clean areas. • Trash is widely/evenly distributed and/or small accumulations are visible. • At least two or three pieces per car length on average. • It would take a more organized effort to remove all trash from the area.
Very High – Very Littered	• Trash is continuously seen throughout the assessment area. • Large piles and a strong impression of lack of concern for litter in the area. • There is often significant litter. • It would take a large number of people during an organized effort to remove all trash from the area.

5.0 Summary of Pending Urban Trash Assessment ROW

Caltrans has calculated that approximately 2,100 urban centerline miles (see columns 2 and 3 in Table 5.1 below) will be assessed to comply with Order.

Table 5.1: Total Centerlines Pending Assessment

District	Rural Centerline Miles	Centerline Miles in Phase 2 MS4	Urban Centerline Miles	Total Centerline Miles
1	941	45	0	941
2	1,672	0.4	47	1,719
3	1,266	32	127	1,393
4	284	7	92	376
5	844	31	276	1,120
6	1,764	8	229	1,993
7	273	0	292	566
8	1,336	0	343	1,680
9	736	0	0	736
10	1,132	9	162	1,294
11	676	6	209	884
12	4	0	200	203
Totals	**10,928**	**138**	**1,977**	**12,906**



6.0 Rural ROW Trash Assessment

There are 10,794 centerline miles in Caltrans rural ROW: As provided by the Order, Caltrans may use desktop methods to identify STGAs for rural ROW. To manage existing resources, Caltrans will identify STGAs in rural ROW in four (4) major phases:

6.1 Phase 1: Low Trash Rating Threshold

Caltrans will establish a rural ROW low trash rating threshold by correlating annual litter removal to low-rated control sites within the San Francisco Regional Board CDO enforcement area. Six trash generating areas within the SF RWQCB trash discharge CDO area were evaluated to determine annual litter production for the purposes of correlating these control sites and applying the results to establish a low rating threshold for rural ROW of the state that require trash assessment.

Integrated Maintenance Management System (IMMS) is a platform that the Division of Maintenance used to plan, perform, record, and manage maintenance work. IMMS, used as an asset management tool, allows District stormwater managers to track effort across the various litter collection activities to extract the data needed to areas with a history of regeneration. IMMS allows Caltrans to track expenditures and production through work orders for the following litter collection activities:

- **On-foot Removal (Caltrans and contracted forces)**
- **Road patrol**
- **Sweeping**
- **Encampment Removal**
- **Encampment Cleaning (hazardous materials / litter contracts)**
- **Delegated Maintenance Agreements**
- **Adopt-A-Highway**

After evaluating the data, an annual per mile threshold of 30 Cubic Yards (CY) per mile per year has been established in areas that have direct discharge to receiving waters and require heightened water quality protection. A separate threshold of 60 CY per mile per year has been established for areas that do not directly discharge to receiving waters.

These thresholds were established considering the following trash profile characteristics:

- **Trash is defined as improperly discarded solid material according to the Trash Provisions including, but not limited to, bottles, cans, cigarette butts, and plastic containers that can be mobilized through contact with stormwater.**
- **Trash can also include large articles such as tires, ladders, bumpers; however, these are not mobilized through contact with stormwater.**
- **In addition, any trash larger than the 1-3/8” drainage inlet grate openings is too big to be transported to receiving water via the storm drain conveyance system.**
- **There is either no storm drain conveyance system or the storm drain system does not directly discharge to a receiving water.**
- **Caltrans litter production metrics includes content that is beyond the regulatory definition of trash, such as vegetation, sediment, and other materials.**

2022 Annual litter production metrics was evaluated from control sites associated with the District 4 CDO to compare against unrated rural sites that have been assumed to be low trash generation inherent with low traffic volume and population characteristics.

Table 6.1 below demonstrates that a 30 cubic yards per mile per year threshold correlates to low trash generation rating when compared to the control sites under D4 CDO enforcement.

More details on Caltrans trash profile will be provided as part of the trash discharge study through quantitative assessment of inlet content and qualitative descriptions through statewide Maintenance Manager feedback. The thresholds above will be adjusted as necessary based upon the quantitative assessment.

Table 6.1: 2022 Litter Production Case Studies

District	County	Route	Trash Generation Rating	Total Miles	Litter Production (Cubic Yards / Mile / Year)
D4 CDO Control Sites					
4	Napa	29	Low	50	29.8
4	San Mateo	1	Low	50	14.9
4	San Mateo	84	Low	30	31.9
4	Santa Clara	85	Moderate	25	87.4
4	Contra Costa	680	Moderate / High	25	152.2
4	Alameda	580	Very High / High	17	188.3
Unrated Rural Areas					
8	San Bernadino	15	Unrated	110	19.6
9	Inyo / Mono	395	Unrated	60	21.8

6.2 Phase 2: Maintenance Data Trash Dashboard Portal

Caltrans will develop a Trash Dashboard Portal to integrate quantitative maintenance data records to create trash generation visualizations from maintenance work orders that track litter production in relation to receiving waters, historically underserved communities, and environmentally sensitive areas.

Caltrans is taking a spatially explicit approach to identifying rural ROW that exceed the low rating litter production threshold. Caltrans will rely upon location-specific data from IMMS to help identify non-STGA areas and areas requiring OVTA visual assessment as part of Step 4. The Trash Dashboard Portal will not only interface with IMMS to identify STGAs, but also be used as a compliance tool to house STGA mapping, track FTCD

deployment, and full trash capture equivalent institutional controls (maintenance litter collection, vegetation control, and encampment prevention) that Caltrans will deploy through its compliance actions. The Trash Dashboard Portal will also be able to flag upcoming maintenance needs and inspection / cleaning history and provide necessary information to identify potential capital improvement projects.

The Trash Dashboard Portal will be a powerful geospatial stormwater data management and reporting system purpose-built to aid Caltrans in mapping rural areas requiring visual assessment to identify STGAs, documenting implementation driven compliance visual assessments, memorializing inspections and cleanings, tracking litter collection work orders and trash collection volumes, and planning and managing stormwater assets to aid in annual reporting data needs.

Attachment B describes the scope of the Trash Dashboard Portal development, which Caltrans is targeting to complete by October 31, 2023.

6.3 Phase 3: Rural Trash Rating Trash Dashboard Portal

Caltrans will utilize the Trash Dashboard Portal to identify areas that fall above and below the rural non-MS4 area low trash rating threshold.

6.4 Phase 4: Rural Visual Assessments

Caltrans will perform a driving trash assessment for areas that fall above the rural ROW low trash rating threshold. Caltrans will utilize the OVTA Protocol (see Attachment C) developed by the Bay Area Stormwater Management Agencies Association (BASMAA) as a framework, to visually assess rural ROW that exceeded the low rating threshold established in steps 1-3 above. As Phase 3 is completed and the inventory of rural areas requiring OVTA determined, Caltrans will work with State Board to determine:

1. The appropriate assessment intervals (i.e., every 10 - 25 miles) for visual assessments based on corridor characteristics such as centerline miles, historic annual litter production rates, and proximity to receiving waters; and

2. The minimum trash detection frequency within the intervals that would constitute designating the interval a STGA. For example, If Caltrans found on average of more than one moderate trash generating location per mile over any interval, that interval would be considered an STGA. If Caltrans found on average more than one high or very high trash locations per 5 miles within an interval, the interval would be considered an STGA.

This method will facilitate a fiscally responsible approach for performing visual assessments in rural areas that have the same characteristics from long stretches, as opposed to the urban area variability that warrant assessments every 0.5 miles in both directions. The risk of missing STGAs in these stretches will be mitigated through training to ensure the assessor can adaptively manage determinations in the field and use of the Trash Dashboard Portal to flag areas with recurring work orders and litter removal.

Caltrans is targeting to complete this exercise by May 1, 2024.

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7.0 Other STGA Identification Considerations

7.1 Adaptive Management

Caltrans adaptive approach will consist of three discrete phases of implementation. Phase I of the Caltrans Trash Reduction Implementation Plan will focus on specific strategies outlined herein. At the onset of each phase Caltrans will review opportunities and challenges and use available information to set an objective target to achieve by the completion of the phase.

At the end of each phase of implementation, Caltrans will evaluate its progress, compare progress made to expected milestones, and adaptively manage its trash reduction strategies for the successive phase. This approach will demonstrate to the State Board that Caltrans is implementing actions, evaluating the effectiveness of these actions using data collected, learning from that data, and adapting its strategy as needed.

7.2 Homeless Encampments

Caltrans goal in removing encampments is to keep people experiencing homelessness from sheltering on the state Right of Way and to try to connect them, if possible, with safer solutions. Caltrans partners with nonprofits and local government agencies that are funded, trained, and equipped to help people encamping on the state right-of-way to find alternative placement for shelter options and/or housing.

Caltrans District Encampment Coordinators notify local social service providers to request that a site visit is conducted to engage people experiencing homelessness (PEH) with offers of shelter options or other available assistance this is generally not the first contact individuals have had with social services providers. When possible, Coordinators provide two weeks for partners to perform outreach services for priority Level 2 encampments before posting. The District Coordinators can allow more time for PEH to move when housing/shelter options are imminent prior to posting.

District Coordinators remain in contact with social service providers to request information about the removal regarding how many PEH accepted services/ if not why not. Coordinators work with social service providers to engage PEH that return to the site and/or to help social service providers locate PEH who may have moved to another site nearby so that they can continue to provide outreach and support.

It is critical to understand that outreach to social service providers and delivery of services to people experiencing homelessness (PEH) is a process and not a one-time event. In some instances, it may be the first point of contact when an encampment removal is proposed, but it is generally not the first or last and in fact, is likely to be a part of contact being made over the course of several weeks before an encampment is removed. The outcome to this effort may take months or years to gauge the effectiveness of the outreach and subsequent case management.

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7.3 Point in Time Count

Each year Caltrans will perform an encampment count starting in January. An encampment count spreadsheet (Attachment D) and instructions are provided to the homelessness and encampment coordinator in each District to ensure statewide consistency, including quality assurance / control requirements.

Information such as city, county, route, postmile and direction of travel, the number of shelters in each camp site, the presence of RVs and/or vehicles that are used as a shelter/living space will be documented. Shelters are living quarters, and can be tents, RVs, vehicles, structures that are made of wood, cardboard or tarps, etc. If an area is lived in, but PEH are not using a shelter, such as sleeping on cardboard, couches, mattresses etc., this should be counted as a shelter to identify the presence of an encampment.

7.4 Special Event Considerations

Maintenance staff travel highways, ramps, and collector systems weekly to inspect and observe overall conditions and to detect deficiencies, including the presence of trash. These inspections are an integral part of maintenance resource planning and deployment. Maintenance staff observe overall conditions to assure conformance with the established maintenance levels. Each Caltrans District manager will be directed to provide an assessment of widely understood trash generating areas in their district such as informal trucker rest areas, vista points, routes to landfills, and special events.

8.0 Full Trash Capture Equivalency

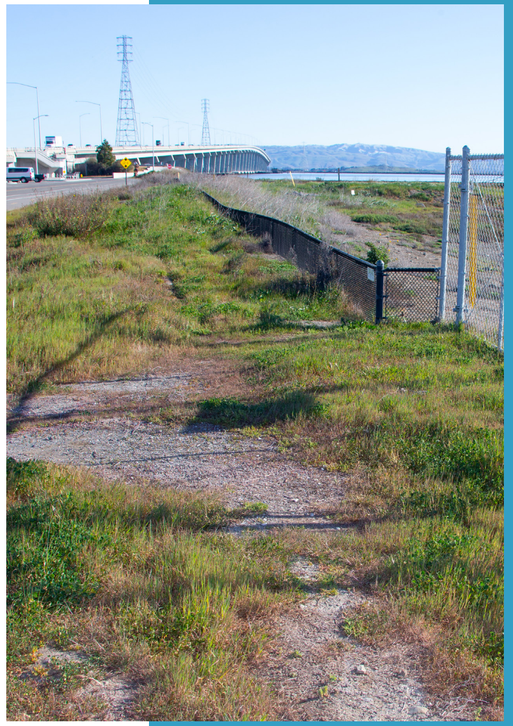
8.1 Overview

Caltrans is required to periodically visually assess its ROW to ensure it is controlling trash from STGAs. A subjective and qualitative visual assessment approach, somewhat similar to that used by Bay Area municipalities, is used to identify trash hot spots to both satisfy (1) the Region 2 Cease & Desist Order (CDO) that required Caltrans to visually reassess the trash generation conditions in low and moderate trash generating areas of its ROW in 2022 and (2) the newly adopted Order. These assessments are required to enable Caltrans to identify and ensure it is controlling trash from all its STGAs sufficient to meet CDO benchmarks and Trash Provisions full compliance deadline of December 2, 2030.

Caltrans will continue its efforts, started on 2020, to develop a more scientifically sound, objective and quantitative approach to demonstrate full capture equivalency. Below is a summary of what has been completed and what is currently planned.

8.2 Trash Discharge Study

Caltrans is currently performing a trash discharge study to establish a maintenance activity performance standard by identifying the type and frequency of maintenance activities that reduce trash discharges to the storm drain system at an equivalent level of a structural full trash capture system. The maintenance activities and corresponding trash discharge volumes will be recorded and measured, with the performance standard translating to compliant trash discharge volumes (zero to five gallons per acre per year).



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The Trash Discharge Study will determine the volume of trash reaching storm drain conveyance systems measured in gallons/acre/year. The Study will include:

- **Collecting trash at baseline and enhanced trash collection maintenance ROW.**
- **Measuring the volume of trash entering the storm drain inlets and captured by certified full capture systems.**
- **Substantiating Full Capture equivalency or low trash rating based - less than 5 gal/acre/year.**
- **Identifying ROW locations where additional enhance maintenance is necessary to accomplish Full Capture Equivalency.**

Catch basin inlet inserts will be temporarily installed as the full trash capture device needed to monitor trash accumulation. Measurements will be taken over one year. The trash discharge rate will be measured for each of these sites and the results compared to the five gallons/acre/year BASMAA study threshold for a low trash generation classification. This trash discharge study could be used to further substantiate maintenance credits by documenting trash load reduction credit in Caltrans ROW that supports the attainment of trash reduction milestones. The findings of the study will be documented in a report scheduled to be complete by June 2024.

The primary objective of the study is to determine the baseline or enhanced trash collection maintenance that establishes Full Trash Capture Equivalency.

8.2.1 Urbanized ROW

A design study (Attachment E) has been developed to identify EMM study areas at approximately 40 inlet locations in the San Francisco Bay area and Los Angeles area, define maintenance actions and their frequency in those areas, determine the volume entering the storm drain system that has the potential to threaten water quality, and consider adaptively managing the type and/or frequency of maintenance actions to adapt to varying trash conditions over time. The locations will not be in vegetated locations. Caltrans will work with the Regional Water Boards to determine the ideal study locations. Because the study is both labor and cost intensive, Caltrans is clustering the locations in two high traffic volume areas in the state for the purpose of efficiently utilizing resource.

Depending on the results of the study, additional actions may require adaptively improving the practice to identify the optimum level of effort that effectively reduce trash discharge to a full capture equivalent level for high and very high rated areas, or the combination of efforts, potentially including the combination of EMMs with structural controls.

8.2.2 Rural ROW

Approximately 20 drainage inlet locations will be studied, with at least 10 locations focused on Caltrans north region (District 1-3). The locations will be in rural ROW with a variety of annual per mile litter production. The locations will also be situated in areas with heightened environmental sensitivity that are in proximity, or directly discharge to receiving waters. Caltrans will work with the Regional Water Boards to determine the ideal Study locations. If the results indicate that additional sites are warranted to draw conclusions, the study may be expanded to accommodate additional data points.



8.2.3 Next Steps

Field visits will be performed at each desktop-identified study location to confirm safe and feasible access for field teams to perform trash volume measurements and other key observations. Tributary drainage areas for each study location will be determined using available information that may include survey data, aerial imagery, associated elevations, and as-builts. More details on Caltrans trash profile will be provided as part of the trash discharge study through quantitative assessment of inlet content and qualitative descriptions through statewide Maintenance Manager feedback.

8.3 Early Results - Vegetation Study

Caltrans completed a two-year study between 2020 to 2022 at 14 drainage inlet locations situated in vegetated areas. Full trash capture equivalency was established by routinely measuring how much trash volume physically entered the drain inlets, as captured by full trash capture inlet inserts. The results showed that all 14 inlets received less than 5 gal/acre/year. In fact, 11 of the 14 sites received less than 0.4 gal/acre/year.

The findings of this study, as shown in Table 8.1, indicates that vegetation within Caltrans ROW has the potential to trap trash to the FTCE standard. This conclusion is based on the measured trash generation rates from all study areas, which all fall within the Low trash generation category with a rate of 0 to 5 gallons of trash generated per acre per year. Caltrans is committed to substantiate full trash capture equivalency for the vegetation areas through trash control maintenance measures. This will be used state-wide and will assist in meeting the Order's benchmarks.

The sites will be revisited over the next month to extract an additional trash volume data point to determine the discharge volume associated with the Bay area's 12 major storm events over the past 5 months, and to determine if there has been any change as compared to prior drought years. Vegetation characteristics will also be qualitatively documented. Finally, a routine maintenance schedule will be identified to ensure that the visual nuisance of trash in Caltrans ROW, trapped by vegetation, is removed in a timely manner to prevent the discharge of trash in excess of 5 gal/acre/year for trash 5mm or greater into the storm drain conveyance system.

Table 8.1: Vegetation Control Discharge Results

Site	Trash Generation Rating	Trash Generated (gallons/acre/year)
1	Moderate	0.15
2	Moderate	0.22
3	Moderate	2.07
4	Moderate	1.14
5	Moderate	0.27
6	Moderate	0.35
7	Moderate	1.91
8	Moderate	0.00
9	Moderate	0.33
10	Moderate	0.20
11	High	0.00
12	High	0.26
13	High	0.04
14	High	0.27

8.3.4 Early Results – Trash Nets

As part of the trash discharge study, Caltrans recently measured trash volumes from five certified FTCD end-of-pipe trash nets to calculate associated gallons per acre per year of trash discharged. The purpose of this exercise was to obtain advance quantitative trash discharge since there has been a deluge of wet weather across California over between October 2022 and March 2023. The data will be included as part of the trash discharge study conclusions with trash measurement results used to evaluate the effectiveness of Caltrans' maintenance measures at preventing trash discharges to the storm drain system. The findings from this initial measurement showed that trash discharge rates were all less than 5 gallons/acre/year at the measured locations, suggesting maintenance measures, even at the sites with very high or high STGA ratings, were effective at reducing trash discharges. The full data summary from these volume measurements is presented in Table 8.2 below.

Table 8.2: Trash Discharge Volume

Trash Capture Device IMMS D	Description	Trash Rating	1-Mile Average Annual Manual Litter Collection	Trash Net Installation	Trash Net Cleaned	Gallons Trash Captured	Drainage Area (Acres)	Capture (Gal/Acre/Year)
SWALA580-W039178	WB I-580 TO NB SR-13	Very High	188 CY	March 2022	March 2023	10	2.09	4.78
SWALA580-EO31689	EB I-580 @ 164th	Moderate / High	188 CY	March 2022	March 2023	1	4.61	0.25
SWALA580-W039880	WB I-580 @ MacArthur	Moderate	188 CY	March 2022	April 2023	3	6.2	0.48
SWALA880-S007278	SB 880 @ Mowry	Moderate	146 CY	2020	March 2023	0.25	10.7	0.02
SWALA880-S006312	SB 880 @ Stevenson	Moderate / High	146 CY	March 2022	April 2023	13.5	5.37	0.59

9.0 Interim Trash Reduction Milestones

Caltrans will be implementing full capture systems and submitting compliance credit acreage through any combination of other treatment controls, source control activities and/or institutional controls to meet trash reduction milestones.

The trash reduction milestones are established as the following:

1. **By December 2, 2025, achieve full capture equivalency at 35 percent or more of the total STGAs identified.**
2. **By December 2, 2028, achieve full capture equivalency at 70 percent or more of the total STGAs identified.**
3. **By December 2, 2030, achieve full capture equivalency at 100 percent of the acres identified as STGAs.**

Once the trash assessment is complete and the total inventory of STGAs established, Caltrans will be able to apply a quantitative number to each compliance benchmark. Each District will be asked to develop a compliance plan to outline the multi-pronged trash response actions and Caltrans District stormwater managers will monitor progress, including the programming and delivery of Full Capture Equivalency projects, to ensure Caltrans succeeds in meeting the water quality protection goals.

The above milestones may be subject to change, as Caltrans can submit its own trash reduction milestones for State Water Board Executive Director review and approval.

10.0 Baseline Trash Volume

A number of factors (e.g., traffic volumes, adjacent land use, adjacent economic profile, and rainfall) may affect trash generation and loading. Annual trash generation rates (cubic yard/mile & gal/acre) will be explored for each Caltrans District.

To assess the range and differences in trash generation rates by District or region, maintenance District managers will be interviewed to determine an approximate percent of qualifying trash from each discrete litter collection activity. For example, road patrol litter crews typically collect and remove large pieces of trash from in and around the travel way such as ladders, tires, etc. Street sweeping will also have its own profile based on the amount of sediment and organics that are associated with that activity. Adjustment factors will be established for each litter collection activities based on maintenance feedback.

Baseline trash generation rates will be established for each trash rating (very high, high, and moderate) based on historic IMMS litter production data and application of the adjustment factor from maintenance interviews and trash discharge study results.

11.0 Annual Trash Reduction

Based on trash generation rates described in the previous sections, annual trash reduction (gal/acre) for Caltrans stormwater will be determined from the areas where full trash capture devices are installed along with full trash capture equivalent institutional controls.

11.1 Annual Report

The Order requires that a Trash Monitoring Report is prepared annually and submitted by November 30th each year. The report will describe the implementation progress achieved during the previous fiscal year reporting period of July 1 through June 30. As a part of the Annual Trash Monitoring Report, Caltrans will perform an annual assessment of the amount of trash reduction achieved through implementation of full capture systems, other treatment controls, and institutional controls. This assessment will be performed and documented per the Trash Monitoring Plan.

11.2 Level of Service (LOS)

LOS evaluates and reports how the Division of Maintenance is maintaining the State Highway System. LOS scores are generated by evaluating STGAs throughout the State Highway System. This assessment enables Caltrans to monitor performance and adaptively manage the frequency of litter collection activities. Caltrans has been performing quarterly LOS assessments since July 2021 in provide legislative accountability reporting toward measurable objectives and performance outcomes associated with Governor Newsom's Clean CA initiative. The results to date reveal increasing systemwide LOS as a result of increasing resources dedicated to litter abatement efforts.

OVTA and LOS are both visual assessments, therefore, Caltrans recommends utilizing the existing LOS practice to optimize limited resources lends itself as a compliance tool for Caltrans to demonstrate progress toward regulatory trash compliance objectives. Visual assessment consolidation is being applied only in the limited areas where LOS is being performed. The permit allows Caltrans to continue with its current trash assessment efforts until such time the new trash assessment methodology is approved by the State Board.

12.0 Trash Assessment Implementation Deliverables

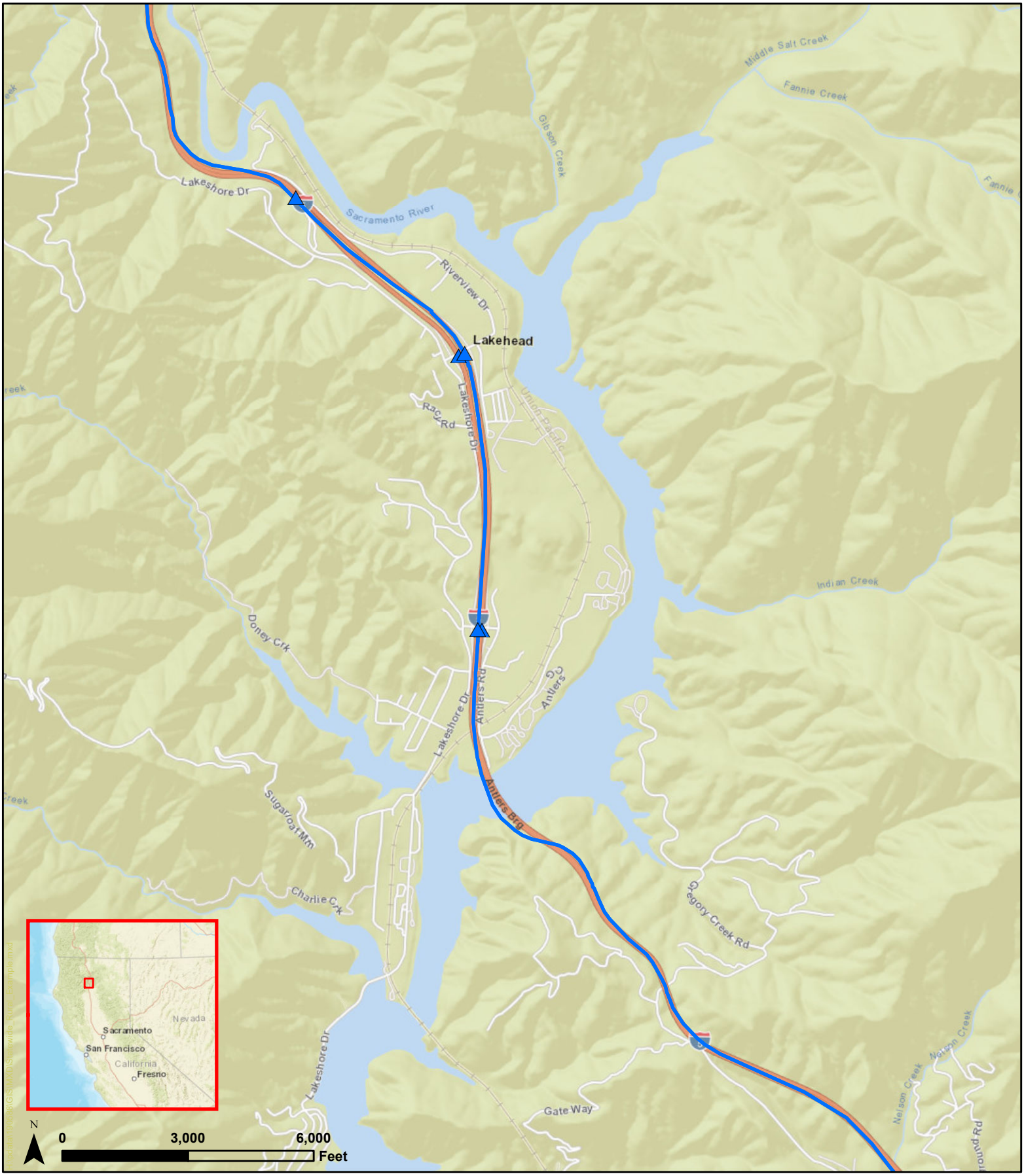
This section outlines the deliverables from the implementation assessment plan and associated Order requirements. This schedule of deliverables will help Caltrans and our stakeholders ensure timely action in the phased approach to statewide trash assessment efforts. Progress will be documented in the Annual Trash Report. See Table 12.1 for a list of Trash Assessment Deliverables.

Table 12.1: Trash Assessment Deliverables

Attachment E Order Reference	Plan Section	Plan Section	Action Description	Begin Date	End Date
E.9.3.b	4.0	4.0	OVTA Assessment within MS4	May 1, 2023	December 31, 2023
E.9.2.	2.5	2.5	GIS Mapping of MS4 STGAs	May 1, 2023	January 31, 2024
E.9.3.a	6.0 6.1	6.0 6.1	Rural ROW Assessment Trash Dashboard Portal	May 1, 2023	October 31, 2023
E.9.2.b	2.5	2.5	GIS Mapping of Rural non-STGAs	September 1, 2023	November 30, 2023
E.9.3.b	4.0	4.0	OVTA Assessment Outside of MS4	November 1, 2023	May 1, 2024
E.9.2.b	2.5	2.5	GIS Mapping of STGAs Outside of MS4	December 1, 2023	June 1, 2024
E.9.3.c	7.2	7.2	Homelessness Encampment Point in Time Count	January 6, 2023 (Annual Effort)	February 17, 2023 (Annual Effort)
E.9.3.d	6.1	6.1	Substitute for visual assessment Draft Low Trash Rating Threshold	March 1, 2023	April 30, 2023
E.9.2.c	8.3	8.3	Full Trash Capture Equivalency Trash Discharge Study – 40 Urban ROW Drainage Inlet Locations	March 1, 2023	July 31, 2024
E.9.3.d	8.4	8.4	Substitute for visual assessment Trash Discharge Study – 20 Rural ROW Drainage Inlet Location	May 1, 2023	July 31, 2024
E9.4	9.0:	9.0:	Baseline Trash Assessment Volume	May 1, 2023	December 1,2023
E.9.3.d	6.1	6.1	Substitute for visual assessment Final Low Trash Rating Threshold	October 1, 2023	May 31, 2024

Attachment A:

Sample of Assessment and STGA Maps

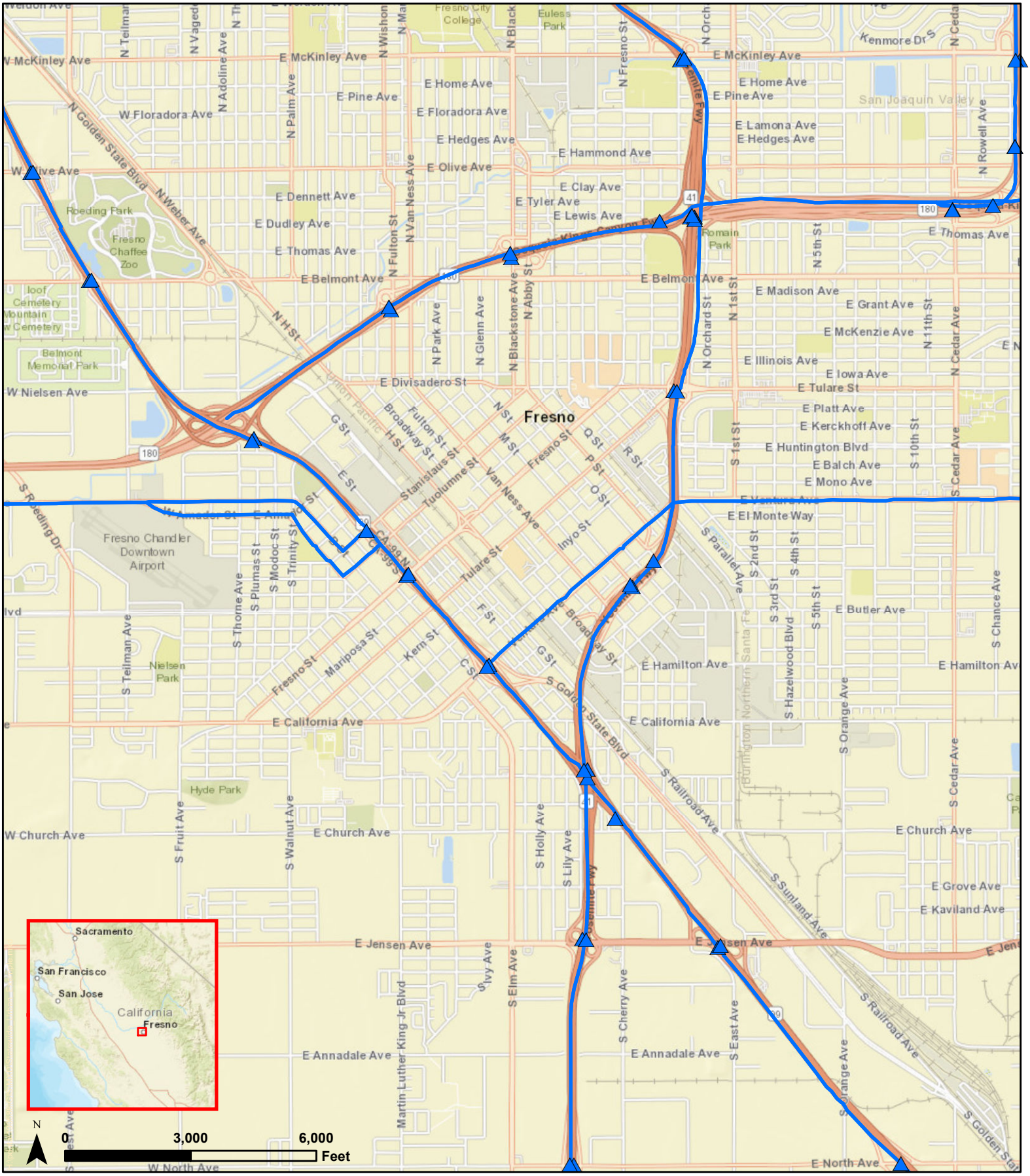


Ramps
Reassessment Area
Highways (North and East Direction)
Reassessment Area
Highways (South and West Direction)
Reassessment Area

Rural Highway Example

Reassessment Area

Lakehead, Shasta County / 40.89808, -122.38288



Ramps

▲ Reassessment Ramp

Highways (North and East Direction)

— Reassessment Area

Highways (South and West Direction)

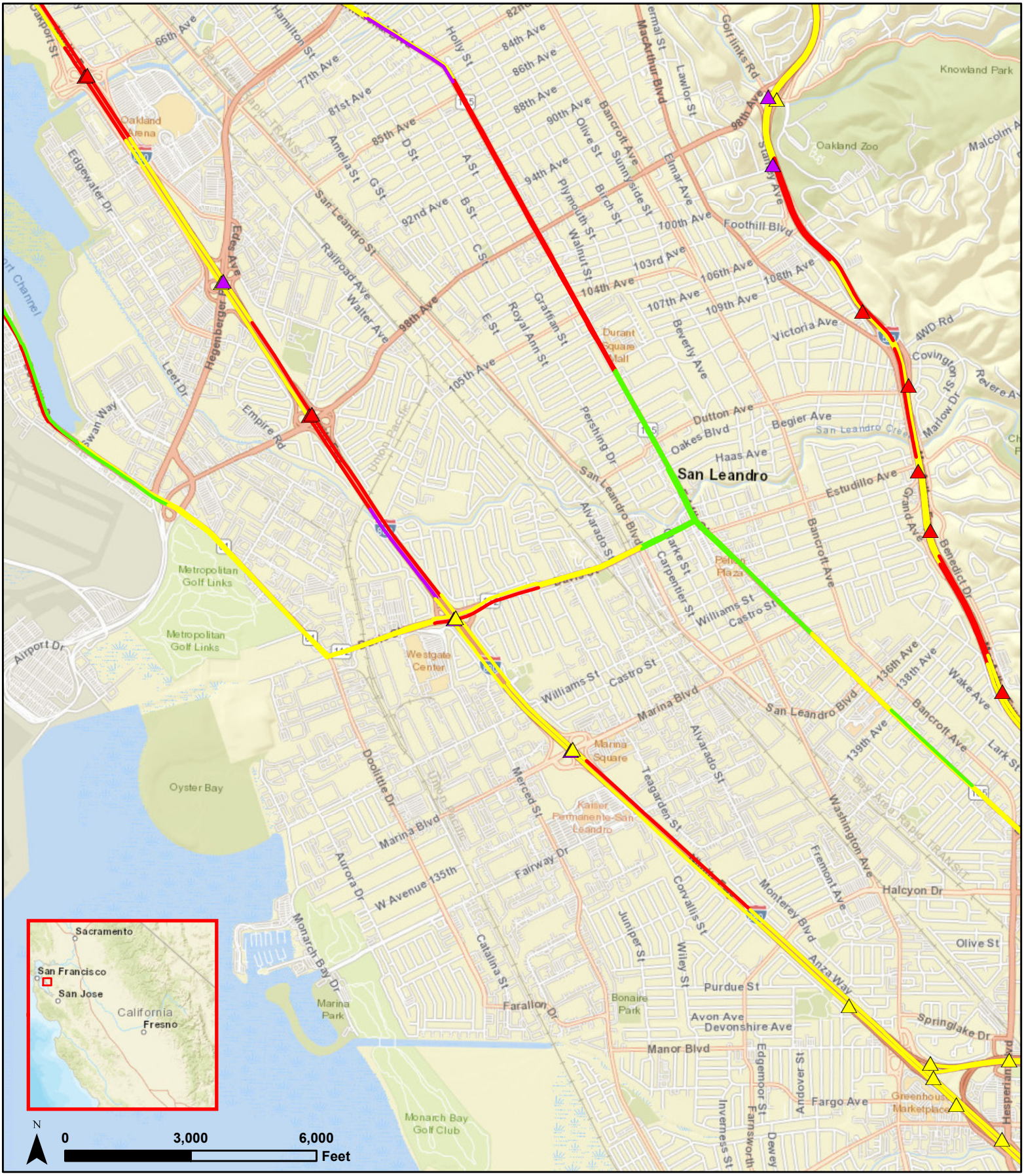
— Reassessment Area

Urban Highway Example

Reassessment Area

Fresno, Fresno County / 36.72597, -119.79346

Caltrans



Ramps

- Low
- Moderate
- High
- Very High

Highways

- Low
- Moderate
- High
- Very High

Urban Highway Example

Assessed Area

San Leandro, Alameda County / 37.72086, -122.17176

Caltrans

Attachment B:

Draft Trash Dashboard Portal Development Scope

PURPOSE

The Trash Provisions became effective on December 2, 2015 and prohibit the discharge of trash to receiving waters. Throughout the state, trash is typically generated on land and transported to surface waters through stormwater discharges. The Trash Provisions have been formalized into Attachment E Section E.9 requirements of the Caltrans National Pollutant Discharge Elimination System (NPDES) Statewide Stormwater Permit (Order) adopted on June 22, 2022. The Order includes the implementation requirements for the Trash Total Maximum Daily Loads in District 7. Caltrans is also under a Trash Discharge Cease and Desist Order in District 4. To address statewide trash assessment and compliance obligations, Caltrans has developed an assessment methodology known as the 2023 Trash Assessment Implementation Plan.

There are several challenges surrounding Trash assessment and compliance crediting from response actions and the associated mapping. Caltrans consultant, with oversight support from District 6 GIS experts, will develop a Trash Dashboard Portal, mobile data collector, and associated inventory web mapping to facilitate the tracking and annual reporting of compliance progress; providing a tool for cross-functional response teams Statewide.

EXPERIENCE

In addition to Caltrans experience with Trash assessment mapping, the Design team shall also demonstrate competency utilizing the following technologies:

- ArcGIS Online and Portal
- ArcGIS Survey123 and Field Maps
- Integrated Maintenance Management System (IMMS)
- Microsoft SQL Server
- On-land Visual Trash Assessment (OVTA)

PROPOSED SCOPE OF WORK

Caltrans consultant, with District 6 oversight, shall provide professional GIS services to assist the Program in developing a trash assessment visualization tool that integrates IMMS, Municipal Separate Stormwater System boundaries, receiving water bodies, and Environmentally Sensitive Areas to map Significant Trash Generating Areas (STGAs) (as determined by OVTA). The tool will serve to identify rural areas with litter production less than 30 CY / mile / year that will be designated as low trash generation, identify rural areas with litter production greater than 30 CY / mile / year that will require modified OVTA, provide a repository for compliance actions through a mobile application Maintenance managers can utilize in response to enhanced maintenance, and extract annual compliance actions for regulatory reporting purposes.

The Stormwater Program will provide the associated documentation and resources. The GIS Design Team will perform coordination with other Caltrans divisions to procure additional resources as needed (e.g., ArcGIS Online or Portal accounts) to perform work including with the Division of Maintenance Statewide IMMS lead to obtain IMMS litter production data from FY 20, FY 21, FY 22, and in real time moving forward .

Development of the Trash Assessment and Compliance Dashboard will occur in phases as information is needed and/or obtained.

Task – GIS Database Architecture and Mobile Collection Plan

- Provide a website with aesthetic visuals and with mapping, filtering, editing and downloading functionality
- Develop the high-GIS accuracy Survey123 forms with compliance logic in accordance with the Design Information Bulletin 82 (DIB82) and the Caltrans Standard Plans
- Develop a centralized GIS repository in SQL Server for all ADA information.

Deliverable(s):

1.1 – Visualization Platform
1.2 – Mobile Application
1.3 – Repository Website

DRAFT

Attachment C:

Caltrans Driving OVTA Protocol

Driving On-Land Visual Trash Assessment Protocol

California Department of Transportation
Division of Environmental Analysis
1120 N Street
Sacramento, CA 95814
http://www.dot.ca.gov/hq/env/stormwater/

CTSW-RT-17-316.19.1

Last Updated: April 2023

For individuals with sensory disabilities, this document is available in alternate formats upon request.

Please call or write to:

Stormwater Liaison, Caltrans Division of Environmental Analysis, MS-27
P.O. Box 942874, Sacramento, CA 94274 0001
(916) 653 8896 Voice, or dial 711 to use a relay service.

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1. Introduction

The purpose of the Driving On-land Visual Trash Assessment (OVTA) Protocol is to provide a repeatable methodology for obtaining qualitative estimates of trash discharges from Caltrans right-of-way (ROW) to storm water conveyance systems. The protocol is designed as a driving methodology to assess highways and ramps that cannot be walked or are unsafe to walk.

"Trash generation" is a term used to describe the amount, or volume, of trash that enters storm drain inlets and is believed to be discharged from stormwater conveyance systems to receiving water bodies[1]. The protocol serves the following two purposes:

1. **Confirmation or Establishment of Baseline Trash Generation** – to provide a line of evidence to confirm or to designate trash generation rate categories assigned to specific land areas, and;
2. **Assessing Changes in On-land Trash Generation** – to provide a qualitative tool to assist in evaluating changes in the level of on-land trash that could be transported to a stormwater conveyance system.

In this methodology, the definition of trash or litter is generally consistent with the definition included in California Code Section 68055.1(g)[2]. Trash is defined as all improperly discarded waste material, including, but not limited to, convenience food, beverage, and other product packages, or containers constructed of steel, aluminum, glass, paper, plastic, and other natural and synthetic materials, thrown or deposited on the lands and in the waters of the state, but not including the properly discarded waste of the primary processing of agriculture, mining, logging, sawmilling, or manufacturing.

Trash does not include sediment and vegetation. For this protocol, mattresses, shopping carts, furniture, appliances, and all other illegally dumped items not capable of fitting in a storm drain inlet opening are also excluded from the definition of trash.

[1] Tracking California's Trash On-land Visual Trash Assessment Final Report: http://basmaa.org/DesktopModules/EasyDNNNews/DocumentDownload.ashx?portalid=0&moduleid=524&articleid=21&documentid=70

[2] California Legislative Information - TITLE 7.9. RECYCLING, RESOURCE RECOVERY, AND LITTER PREVENTION https://leginfo.legislature.ca.gov/faces/codes_displayText.xhtml?lawCode=GOV&division=&title=7.9.&part=&chapter=&article=

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2. Assessment Preparation and Planning

2.1 Assessment Personnel

This methodology requires at least two field personnel: one driver, and one passenger performing the visual assessments and managing a camera. An additional person in the office should be designated as a point-of-contact with cell phone numbers of all field personnel and their planned schedule (i.e., location and time). First-time assessors shall review this protocol and discuss the process with an experienced assessor prior to performing assessments. Whenever possible, an experienced assessor will train first-time assessors in the field to ensure the protocol is executed correctly.

2.2 Equipment and Supplies

The following equipment is needed to properly apply the protocol:

- Copy of associated Caltrans Task Order
- Field vehicle;
- Company logo (magnetic placard);
- Digital camera with built-in GPS capabilities, such as the currently used Nikon D5300 digital SLR, used in "sport mode" to achieve fast shutter speeds that minimize blurring when driving at speed.
- Backup camera battery;
- Battery charger for car;
- A car camera window mount;
- Mobile dongle or camera remote with GPS-assisted triggering or distance-lapse photography;
- Cell phone to connect to mobile dongle (if needed);
- Safety/hazard warning light to mount on top of car;
- Permanent marker;
- Clipboard;
- Field maps of the assessment area; and
- Laptop computer for field data QC.

2.3 Assessment Area

When conducting assessments on a highway segment or ramp, the width of the assessment area extends from the center line of the road (or middle of the median) to the edge of the right-of-way. It includes the area that could reach the stormwater drainage system, including but not limited to the median, highway, shoulder, ramps, and vegetated areas[3]. The assessment's focus comprises any trash in visible areas that could theoretically reach the stormwater drainage system. If there are obstructions, such as a fence or dense vegetation, that would prevent trash from moving to the stormwater drainage system, then the area should not be included as part of the assessment[4].

[3] Vegetation in pervious medians or shoulders often captures and retains lighter, wind-blown pieces of trash, making it highly visible to the assessment team. Assessors must use best professional judgement and consider vegetation density and height, as well as the slope % when determining the potential for any vegetation-captured trash to discharge to the drainage system. Since this partial capture often reduces the discharge potential, it must be accounted for when assigning ratings. Refer to section 3 for additional guidance on how to assign ratings when vegetation is present.

[4] Tracking California's Trash On-land Visual Trash Assessment Final Report: https://basmaa.org/wp-content/uploads/2021/01/tct-ovta-report_final-with-appendices.pdf

2.4 Field Maps

Field maps of the assessment areas must be developed to document assessment ratings. The maps must clearly display the ramp locations and 0.5-mile highway segments in each assessment area to help orient assessors in the field. Hard-copy maps shall be printed for each area to be assessed, and assessment results recorded onto the maps with permanent ink.

2.5 Timing of Assessments

Assessments can be performed to establish baseline trash generation rates and to evaluate the progress of trash reduction efforts[5].

When using the protocol to assess baseline trash generation, the timing of the assessment should be selected carefully to account for trash cleanup events (street sweeping, trash cleanups, etc.). Baseline assessments should be conducted right before cleanup events (to the extent practicable) to depict the maximum trash generation for the specific area.

When using the protocol to assess progress of trash reduction efforts, assessments should be performed at the half-way point between sweeping events (such as street sweeping, trash cleanups, etc.) to depict the average trash generation. Progress can only be assessed for segments that already have established baseline generation rates.

Additionally, to reduce the influence of recent rainfall in designating trash generation rates, assessments should not be conducted after a significant rainfall event. For this protocol, a significant rainfall event is defined as at least 0.5 inches of rain in a 24-hour period occurring within a 48-hour period before the assessment. A rainfall event has the potential to wash away highway trash into storm drains, which may lower levels of trash for specific areas of interest.

2.6 Safety

Safety is the top priority when performing assessments. A safety tailboard meeting shall be held with all assessment team members present prior to performing assessments. The safety tailboard shall cover:

- **Safe driving** – Drivers are responsible for navigating the assessment team to and from assessment areas safely. Prior to performing assessments, drivers should familiarize themselves with the planned assessment route, which will assist with the safe navigation of on/off ramps, turns, and assessment areas. Drivers shall not exceed highway speeds of more than 65 mph. If the flow of traffic allows, slower speeds are preferable.
- **No parking or exiting the vehicle in ROW** – Parking or stopping the vehicle in the ROW is strictly prohibited. Drivers shall safely navigate the vehicle to a designated parking area prior to stopping the vehicle and allowing team members to exit.
- **Equipment check** – A safety/hazard warning light shall be installed on the roof of assessment vehicles and be turned on whenever assessments are actively being performed. A company logo (magnetic placard) must be displayed on all field vehicles when performing assessments. At least 2 team members shall independently verify that the logo/placard and safety/hazard light are properly secured to the vehicle prior to beginning assessments.
- **Office contact** – The assessment team shall designate an office point of contact for each day of assessments. The team shall communicate assessment start and finish times, and rely on the office contact for logistical and troubleshooting support if needed.

[5] SWRCB Guidance, Monitoring Considerations for the Trash Amendments: https://www.waterboards.ca.gov/water_issues/programs/stormwater/docs/trash_implementation/monit_considerations_trash_amend_July2017v2.pdf

3. Trash Generation Category Definitions

This assessment protocol is based on visual observations of the level of trash in a defined assessment area. There are four primary trash generation categories (Low, Moderate, High and Very High) that an assessment area may be assigned based on the visual assessment.

Table 1: Trash Generation Categories

Trash Generation Category	Definition
Low – Not Littered	• Effectively no trash is observed in the assessment area. • Approximately less than one piece per two car lengths on average. • There may be some small pieces in the area, but they are not obvious at first glance. • One individual could easily clean up all trash observed in a very short timeframe.
Moderate – Slightly Littered	• Predominantly free of trash except for a few littered areas. • On average, one piece per two car lengths. • The trash could be collected by one or two individuals in a short period of time.
High – Littered	• Predominantly littered except for a few clean areas. • Trash is widely/evenly distributed and/or small accumulations are visible. • At least two or three pieces per car length on average. • It would take a more organized effort to remove all trash from the area.
Very High – Very Littered	• Trash is continuously seen throughout the assessment area. • Large piles and a strong impression of lack of concern for litter in the area. • There is often significant litter. • It would take a large number of people during an organized effort to remove all trash from the area.

Important Note: Because the protocol is intended to assess the level of trash observed on-land that can reasonably be transported to the stormwater conveyance system, only trash that appears to be mobile should be included in the assessment. Large items such as furniture, tires, and appliances should not impact assessment ratings. Additionally, graffiti on highways, walls, buildings, or landscaping in disrepair will not affect the assessment ratings.

3.1 Accounting for Partial Trash Capture by Vegetation

Vegetation in pervious medians or shoulders often captures and retains significant amounts of wind-blown pieces of trash. While this trash may be highly visible to the assessment team, the potential for it to discharge to a storm drain is affected by the height and density of the vegetation, and the topography of the surrounding area. Assessors must use best professional judgement when determining the potential for any vegetation-captured trash to discharge to the drainage system and assign ratings accordingly. Figure 1 shows an example of trash captured in the vegetation of a highway shoulder. Given the flat topography and dense brush in the example photo, an assessor could reasonably assign this segment a “moderate” rating instead of “high”.

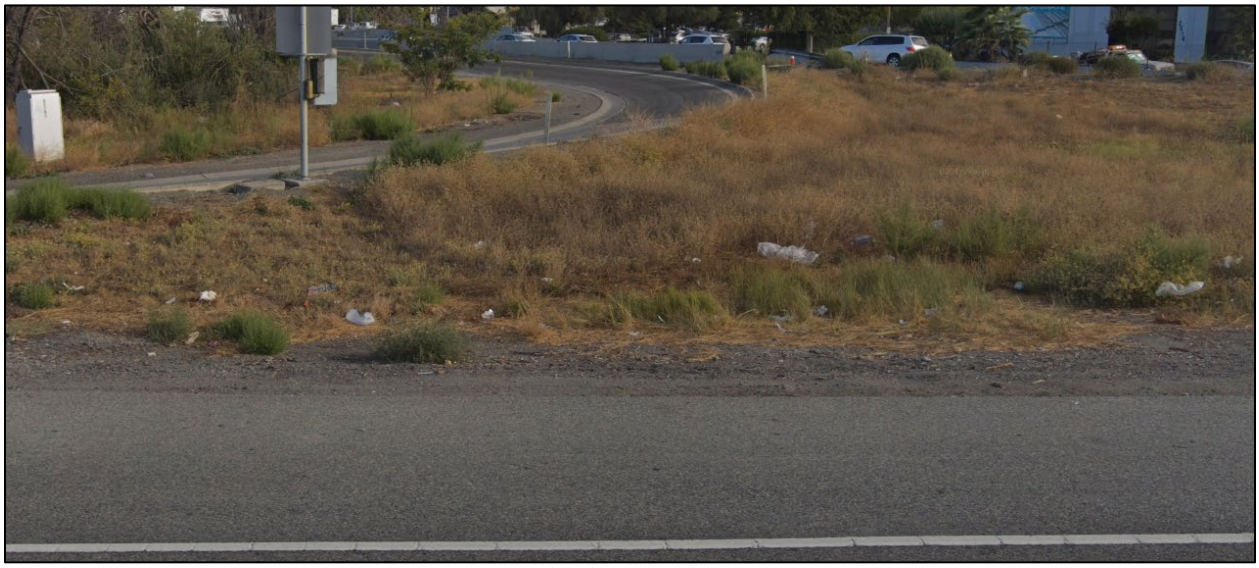


Figure 1: Partial Trash Capture by Vegetated Shoulder

3.2 Low Trash Generation Category – Not Littered

The following figure show examples of low trash levels. Effectively no trash is observed in the assessment area.

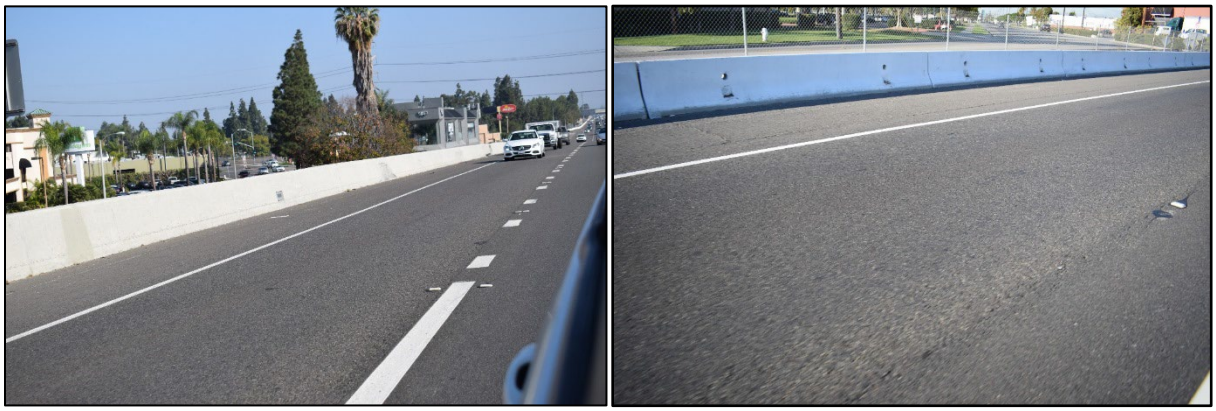


Figure 2: Low Trash Generation Category Examples

3.3 Moderate Trash Generation Category – Slightly Littered

The following figure show examples of moderate trash levels. The assessment area is predominantly free of trash except for a few littered areas.



Figure 3: Moderate Trash Generation Category Examples

3.4 High Trash Generation Category – Littered

The following figure show examples of high trash levels. The assessment area is predominantly littered except for a few clean areas.



Figure 4: High Trash Generation Category Examples

3.5 Very High Trash Generation Category – Very Littered

The following figure show examples of very high trash levels. Trash is continuously seen throughout the assessment area.



Figure 5: Very High Trash Generation Category Examples

4. Assessment Protocol

4.1 Safety Reminder

Safety is the top priority when performing assessments. Prior to the start of the visual assessment, ensure a company logo (magnetic placard) is clearly displayed on the side door panel of the field vehicle. Place the safety/hazard warning light on top of your car and test its function. The lights shall be turned on at all times when assessments are actively being performed. Drivers shall not exceed highway speeds of more than 65 mph. If the flow of traffic allows, slower speeds are preferable.

4.2 Preparation and Camera Set-up

Field maps prepared in the office should clearly delineate 0.5-mile highway segments and ramps. The delineation will help field assessors easy identify the segment or ramp they are rating while driving the highway.

Prior to beginning an assessment, the camera must be mounted to a window on the right side of the car with a camera window mount. The mount assists with capturing quality photographs with a consistent field of view. The camera should be angled to capture the maximum amount of ROW while minimizing features that are not relevant to the assessment (e.g. side of field vehicle, sky, etc.). The optimal camera position is angled approximately 120 degrees (in the horizontal plane) from the direction of travel and 30 degrees down (from the horizontal plane).

The following figure shows an example of the proper camera set-up.



Figure 6: Proper Camera Window-Mount Setup

Once the camera is correctly mounted, the mobile dongle or camera remote shall be set to take photos every 0.1 miles. Proper function of the distance-lapse or remote photo triggers should be tested prior to beginning an assessment.

For ramp assessments, the camera operator shall unmount the camera from the window and manually "point and shoot" to capture two to five representative photos of ramp trash generation rates.

4.3 Visual Assessments

When conducting assessments on a highway segment or ramp, the width of the assessment area extends from the center line of the road (or middle of the median) to the edge of the ROW. It includes the area that could reach the stormwater drainage system, including but not limited to the median, highway, shoulder, ramps, and vegetated areas. The assessment's focus comprises any trash in visible areas that could theoretically reach the stormwater drainage system. If there are obstructions, such as a fence or dense vegetation, that would prevent trash from moving to the stormwater drainage system, then the area should not be included as part of the assessment.

A visual assessment begins with the driver safely navigating the vehicle to the beginning of an assessment area. Once in the assessment area, the assessor/camera operator shall initiate the photo collection process and begin documenting the observed trash generation categories associated with each ramp or 0.5-mile highway segment on the field maps using a permanent marker.

4.4 Photographic Documentation

The assessing passenger will also act as the camera operator and ensure photos are properly collected for each ramp and highway assessment area. Photos are collected to document the completion of an assessment but shall not be used to assign trash generation ratings at this time.

4.5 Ramp Assessments

The paper maps should also have ramps displayed that do not show any baseline rates or previously assessed trash generation categories. Ramps will be assessed through visual observations by the field assessor and trash generation categories will be marked on the paper maps. Field assessors will assign a trash category to both the on-and off-ramps and average the two scores for an overall ramp score. The camera operator will do their best to capture a few point-and-shoot photos of the ramps. The photos will support field observations but will not be used to assign ratings to ramps.

5. Data Upload and QAQC

After the completion of each assessment, photos should be checked prior to leaving the assessment area to ensure the photo collection process was completed properly (i.e. photos are geotagged; distance-lapse function was performing correctly, etc.).

Field maps and photos should be digitized and saved to a database storage network within 2 days of completing an assessment to ensure valuable assessment information is not lost.

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Attachment D:

Caltrans 2023 Encampment Survey Worksheet

2023 Encampment Survey

2023 Encampment Survey Worksheet (January 9, 2023 – February 17, 2023)														
	Location								Size of Encampment (# shelters)		# RV/Vehicles			
No	Dist.	Region	City	County	Route	PM (Begin)	PM (End)	Direction of Travel	Small (<10)	Large (>10)	# RV	# Veh	Date count was Assessed	Description of Location
1														
2														
3														
4														
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2023 Encampment Survey

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Attachment E:

Draft Trash Discharge Design Study

TRASH DISCHARGE DESIGN STUDY

Regulatory Background

Statewide Trash Provisions

On April 7, 2015, the State Water Resources Control Board (SWRCB or State Water Board) adopted an amendment to the *Water Quality Control Plan for the Ocean Waters of California to Control Trash and Trash Provisions of the Water Quality Control Plan for Inland Surface Waters, Enclosed Bays, and Estuaries of California*. The Trash Amendments were created to address the impacts trash has on the beneficial uses of surface waters. Throughout the state, trash is typically generated on land and transported to surface waters, including through stormwater discharges.

The National Pollutant Discharge Elimination System (NPDES) Statewide Storm Water Permit Waste Discharge Requirements (WDRs) for State of California Department of Transportation (Order 2022-XXXX-DWQ) (Caltrans NPDES Permit) regulates stormwater and non-stormwater discharges from Caltrans' right-of-way (ROW) and facilities. The order was adopted on June 22, 2022, amends the April 2015 Caltrans NPDES Permit and becomes effective on January 1, 2023. The adopted Caltrans NPDES Permit contains existing trash regulatory requirements in the form of TMDLs in the Los Angeles Region (Caltrans NPDES Permit Attachment IV) and trash reduction measures in high trash generating areas in the San Francisco Bay Region (Caltrans NPDES Permit Attachment V, Part 2).

Overview

Caltrans is required to periodically visually assess its ROW to ensure it is controlling trash from STGAs. It had been using a visual assessment approach somewhat similar to that used by Bay Area municipalities. However, the approach is being modified to both satisfy (1) the Region 2 Cease & Desist Order (CDO) that requires Caltrans to visually reassess the trash generation conditions in low and moderate trash generating areas of its ROW in 2025 and 2029 and (2) the newly adopted Statewide permit. These assessments are required to enable Caltrans to identify and ensure it is controlling trash from all its STGAs sufficient to meet CDO benchmarks and trash reduction requirements by 2030. The modified trash assessment methodology is presented in the Caltrans Trash Assessment Methodology which is presented in a separate document.

Objectives

A task order has been initiated which will determine the actual amount of trash volume measured in gallons/acre/year that is (1) collected by baseline or enhanced trash collection maintenance, and (2) entering the storm drain inlets. The primary objective of the study is to determine the baseline or enhanced trash collection maintenance that establishes Full Trash Capture Equivalency. A

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secondary objective of the study is to develop a more accurate quantitative trash discharge rate determination for Caltrans ROW than what can be achieved by the more qualitative On-land Visual Trash Assessment methodology developed by BASMAA for municipalities.

Goals

1. Establish partial or Full Trash Capture Equivalency by measuring the volume of trash that enters the storm drain inlets through the most common flush mounted 1-3/8" grate opening, as it correlates to baseline or enhanced maintenance frequency.
2. Establish partial or Full Trash Capture Equivalency by measuring the volume of trash that resides on top of storm drain inlets, representing the rare curb opening inlet scenario, as it correlates to baseline or enhanced maintenance frequency.
3. Utilize the results of the study to apply an objective approach to future visual assessment requirements, replacing the subjective and qualitative nature of visual assessments.
4. Determine if trash regeneration rates are impacted by adjacent site characteristics such as socio-economic status and/or land use.

Study Methodology

40 sites will be studied in the Los Angeles and Bay Areas across a diverse cross section of site selection criteria including trash generation ratings, number of travel lanes, contributing drainage area, traffic volumes, population, adjacent socio-economic setting, geographic settings (urban vs rural), and adjacent land use (commercial vs residential).

The diversity of areas being studied may reveal additional information that further substantiates the use of Level of Service to measure progress toward compliance as well as indications of trash regeneration in affluent versus areas of lower socio-economic status as well as confirm low discharge ratings in rural settings that have low populations and low traffic volumes.

20 sites will be studied in the north region in areas presumed to be of low trash generation rating. Locations will be identified in areas of in areas that have direct discharge to receiving waters and require heightened water quality protection.

Catch basin inlet inserts will be temporarily installed as the Full Trash Capture Device (FTCDs) needed to monitor trash accumulation. Measurements will be taken over 1 year. The trash discharge rate will be measured for each of these sites and the results compared to the 5 gallons/acre/year BASMAA study

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threshold for a low trash generation classification. This trash discharge study could be used to further substantiate maintenance credits by documenting trash load reduction credit in Caltrans ROW that supports the attainment of trash reduction milestones. The findings of the study will be documented in a report scheduled to be complete by June 2024.

As part of obtaining early results for this trash discharge study, Caltrans measured trash volumes from five end-of-pipe trash nets to calculate associated gallons per acre per year of trash discharged in March and April of 2023. The purpose of this exercise was to obtain advance quantitative trash discharge since there has been a deluge of wet weather across California over between October 2022 and March 2023. The data will be included as part of the trash discharge study conclusions with trash measurement results used to evaluate the effectiveness of Caltrans' maintenance measures at preventing trash discharges to the storm drain system. The findings from this initial measurement showed that trash discharge rates were all less than 5 gallons/acre/year at the measured locations, suggesting maintenance measures, even at the sites with very high or high STGA ratings, were effective at reducing trash discharges.

Establishing Maintenance Frequency

Once the study site locations are selected and prior to any field data collection of trash volumes, the study leads will engage with District Maintenance Region Managers to establish the frequency of litter collection activities and ensure those are consistently applied throughout the study period. The study team will review IMMS records from the past 3 years to determine the frequency of litter collection activities including, but not limited to, street sweeping, Caltrans and contracted litter pickups, Adopt-A-Highway, road patrol, and drain inlet cleaning.

Expenditures and litter production volumes will be established throughout the corridor and a correlation made to the drainage inlet spot location that will be monitored between May 2023 to May 2024. Throughout the study period, Region Managers will be asked to try and monitor a more granular assessment of maintenance activities and frequency that occur within the tributary area that drains to that singular inlet location and to avoid drain inlet cleaning.

As part of their routine tasks, Maintenance supervisors drive and inspect all highways in their area of responsibility, including ramps and collector systems, at least once a week to observe overall conditions and detect deficiencies. Known or potential problem areas require more frequent inspections. The Area

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Superintendent responsible for several Maintenance Supervisors, ensures conformance to established maintenance levels.

Taking an adaptive management approach to data analysis, Maintenance Region Managers may be requested to slightly increase monthly litter collection frequency, should an enhanced maintenance performance standard reduce discharge volumes to a rate that would achieve a low rating.

The plan will also include an adaptive management approach to inform maintenance and stormwater managers on the potential for dynamic changes in litter collection frequency to adapt to varying trash conditions (more or less trash regeneration) over time.

Full Trash Capture Devices

Inlet catch basin inserts were selected as the FTCDs used to monitor trash accumulation in this study. Referencing the San Francisco Bay RWQCB's list of approved FTCDs, G2 Construction, Incorporated's Drop-In Grated Inlet Trash Screens (GITSTM) will be custom designed and installed at each of the monitoring location inlets. The inserts consist of a stainless-steel collection basket with 5mm perforations and are sized to meet the 1-year, 1-hour storm event. The devices are suspended within the drop inlet with the weight of the grate securing them into place. Perimeter steel panels direct all flows into the center of the receiving basket. A 6-inch opening along the top of the basket serves as an emergency overflow. The FTCDs will be monitored and cleaned free of all trash and/or debris on a monthly basis to ensure full capacity at all times. Field observations verified that the emergency overflow weir was never used. Metal placard signage was fastened to each monitoring inlet grate to identify the study locations and alert Caltrans maintenance crews to refrain from cleaning in or around the inlets for the duration of the study.

Field Monitoring Teams (If needed)

Site monitoring will be conducted by field monitoring teams consisting of two individuals to ensure safety and provide quality assurance and quality control (QA/QC). To reduce variability in field observations, all field personnel received both virtual and in-field training. The virtual training included review of the On-Land Visual Trash Assessment Protocol for Stormwater – Protocol C – Area Based Survey, Version 1.0 (prepared by EOA, Inc. and Keish Environmental, 2018), with a specific focus on trash categorization. Field training consisted of visiting each monitoring location as a group to review site conditions, drainage, access to the FTCDs, and safety. During this training, visual observations will be baselined with all field personnel.

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Inspection Activities

Within the first 10 business days of the month, crews will conduct field visits at each monitoring location. Crews will document qualitative information about the overall site condition.

The crews will then remove the inlet grate, remove trash from the inlet insert, and measured the types of trash and volume of trash captured by the inlet inserts. If trash was present in the insert, the types of trash were further broken down into percentages. The crews will make note of any indications that maintenance had been completed recently as indicated by orange bags from Caltrans Maintenance forces, yellow bags from contracted crews from the Butte County Office of Education Back2Work program, or white bags from the Adopt-A-Highway program that are on site and ready for pick up.

Monitoring Frequency & Measuring Trash Volumes

Two-person field teams will access site study locations and separately quantify all qualifying trash and debris that has accumulate both on top of the grate and within the inlet insert on a quarterly basis during the summer and a monthly basis during rainy season between October 1 and March 31. The volume (gallons) of captured trash on top of the grate will yield a correlation to the effectiveness of maintenance litter collection activities that precludes baseline trash generation from entering inlets with the less common curb opening inlet. The volume (gallons) of captured trash inside the inlet will yield a correlation to the effectiveness of maintenance litter collection activities and the actual trash that fits through the more common 1-3/8" drainage inlet grate opening, further determining a trash discharge rate that has the potential to threaten water quality via stormwater transport through drainage inlet and pipe infrastructure. Other key data, such as maintenance activity observations, rainfall information, and trash discharge observations will also be documented.

Field Form

A Field Form template will be developed to assist monitoring personnel with data collection. The form will be organized into the following sections:

- General Site Information
- Maintenance Information
- Storm Event Data
- Vegetation Observations
- Discharge Observations

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- Trash Observations
- Photographic Documentation

Litter Removal Activities by Maintenance Division

Routine sweeping and litter pickups contribute to the maintenance items described in the study. Maintenance is typically conducted by Caltrans maintenance crews, the Caltrans' Adopt-A-Highway Program, or special crews (Butte County Office of Education Back2Work Contract). The intent of the study is to measure trash discharge generation rates from study areas without changing litter removal practices – maintaining the types or frequencies of activities. Per discussions with maintenance staff, it was determined that maintenance schedules occur on a rolling, as-needed basis, meaning they are not conducted with a prescribed frequency like a city street-sweeping program. As a result, maintenance activities during the study were tracked by field teams through visual observations made during monitoring events. Site maintenance was assumed to have occurred during the previous month when filled trash bags were on site, or when there was a clear reduction in the amount of trash in the study area.

A review of Caltrans' Integrated Maintenance Management System (IMMS) will also be used to verify the historic frequency of litter removal activities within a corridor as well as the frequency of activities performed during the study.

Storm Event Data and Rainfall Totals

During the study, a summary of all storm events that occur during the reporting period will be compiled. This includes recordkeeping of storm durations, individual storm intensities, rainfall totals, and monthly totals. Rainfall data will be obtained from the nearest National Oceanic and Atmospheric Administration (NOAA) rain gauge.

Analyzing Data

Measured trash volumes will be used in conjunction with tributary drainage areas (acres) to calculate trash discharge rates in gallons/acre/year. Statistics will be applied to the discharge data from the 10 very high, 10 high, and 10 moderate rated trash generating sites to determine if the baseline or enhanced maintenance frequency are sufficient to establish partial or full trash capture equivalency, which would equate to low discharge rating as compared to the 5 gal/acre/year threshold. Results from the 8 low rated trash generating sites will be evaluated to determine if the baseline generation and maintenance frequency are sufficient to sustain a low discharge rating as compared to the 5

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gal/acre/year threshold for use in meeting future trash assessment ratings as well. Secondary information may also be derived from the results, such as further substantiating the LOS visual assessment process or differences in trash regeneration across variable site characteristics.

Quality Assurance and Quality Control

To ensure consistency in visual observations and reporting, multiple QA/QC measures will be implemented. All field monitoring will be conducted in teams of two, allowing discussion and confirmation of all observations. Monitoring crews will also be assigned to the same site locations throughout the duration of the study to provide consistency in observations. Upon completion of field data collection, all inspection reports and photos were reviewed by an independent individual. Any discrepancies in reported observations were then discussed with field personnel for verification and agreement. As a final check, 1-2 site monitoring forms were audited by a second, independent individual for confirmation of data on a monthly basis.

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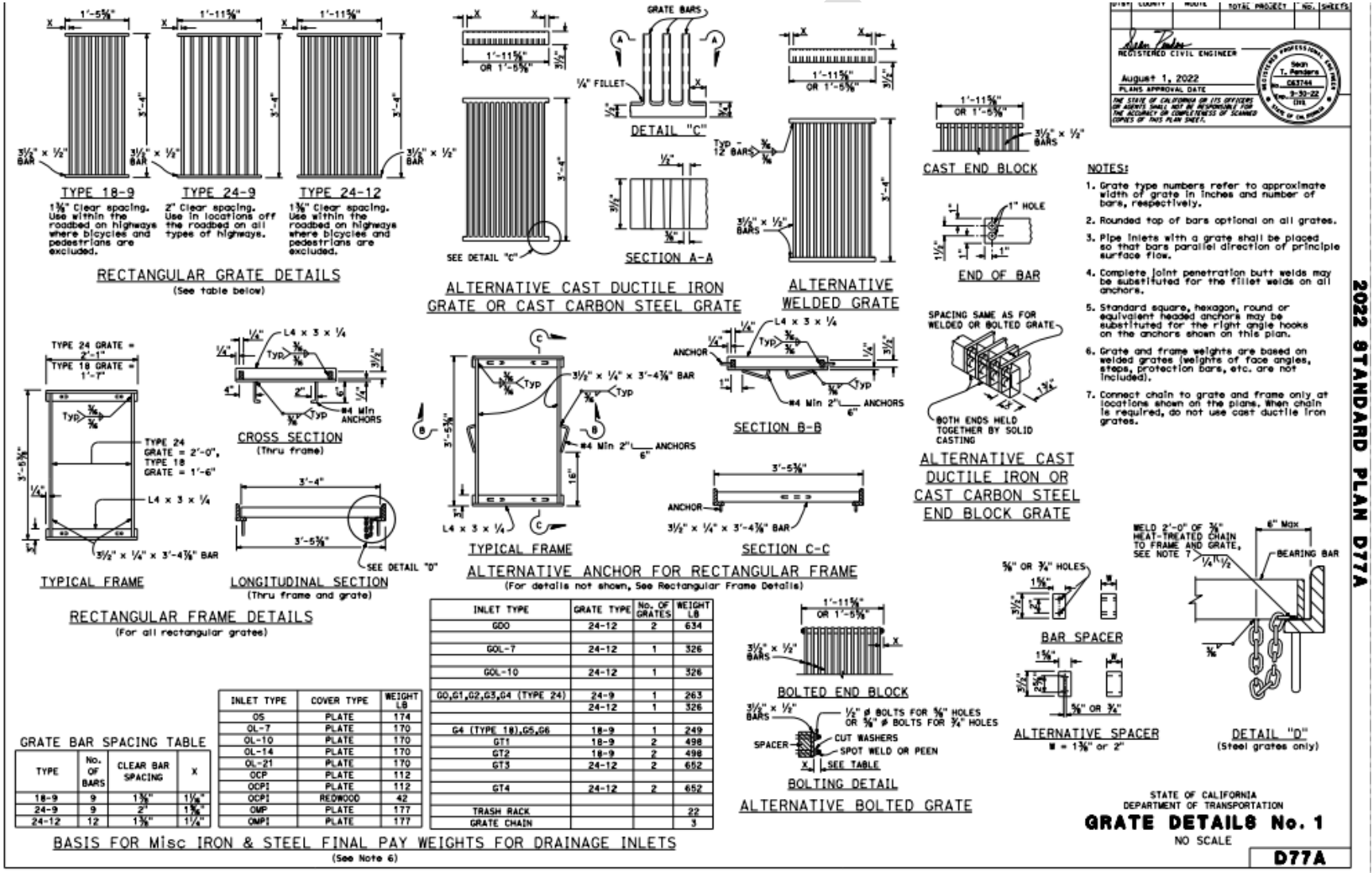
Site Selection											Characteristicts							
Site #	District	Co	Rte	Direction	PM	Inside Shouler	Outside Shoulder	Lat	Long	Maintenance Region Manager	Trash Rating	Level of Service	Population	Economic Status	Urban vs Rural	Adjacent Land Use	# of Lanes	Contributing Drainage Area
1	4										VH							
2	4										VH							
3	4										VH							
4	4										VH							
5	4										VH							



Common Inlet Grate



Less Common Curb Opening Inlet



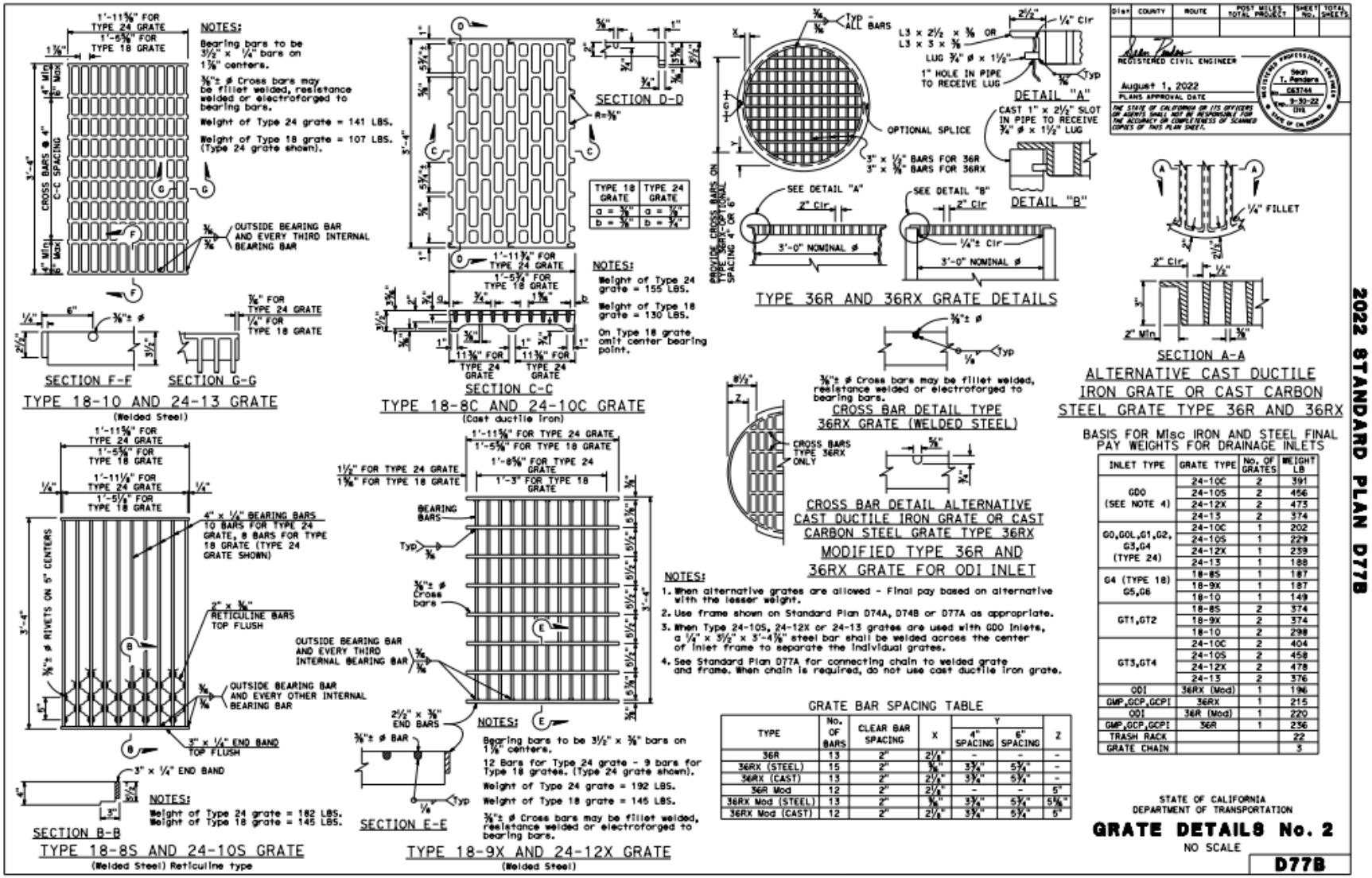
GRATE BAR SPACING TABLE

TYPE	No. OF BARS	CLEAR BAR SPACING	X
18-9	9	1⅜"	1⅛"
24-9	9	2"	1⅝"
24-12	12	1⅜"	1¼"

INLET TYPE	COVER TYPE	WEIGHT LB
OS	PLATE	174
OL-7	PLATE	170
OL-10	PLATE	170
OL-14	PLATE	170
OL-21	PLATE	170
OCP	PLATE	112
OCP[1]	PLATE	112
OCP[1]	REDWOOD	42
OMP	PLATE	177
OMP[1]	PLATE	177

INLET TYPE	GRATE TYPE	No. OF GRATES	WEIGHT LB
GDO	24-12	2	634
GOL-7	24-12	1	326
GOL-10	24-12	1	326
GO,G1,G2,G3,G4 (TYPE 24)	24-9	1	263
	24-12	1	326
G4 (TYPE 18),G5,G6	18-9	1	249
GT1	18-9	2	498
GT2	18-9	2	498
GT3	24-12	2	652
GT4	24-12	2	652
TRASH RACK			22
GRATE CHAIN			3

BASIS FOR Misc IRON & STEEL FINAL PAY WEIGHTS FOR DRAINAGE INLETS
(See Note 6)


2022 STANDARD PLAN D77B
TYPE 18-10 AND 24-13 GRATE
(Welded Steel)
TYPE 18-8C AND 24-10C GRATE
(Cast ductile iron)
TYPE 36R AND 36RX GRATE DETAILS
ALTERNATIVE CAST DUCTILE IRON GRATE OR CAST CARBON STEEL GRATE TYPE 36R AND 36RX
TYPE 18-8S AND 24-10S GRATE
(Welded Steel) Reticuline type
TYPE 18-9X AND 24-12X GRATE
(Welded Steel)
MODIFIED TYPE 36R AND 36RX GRATE FOR ODI INLET
CROSS BAR DETAIL ALTERNATIVE CAST DUCTILE IRON GRATE OR CAST CARBON STEEL GRATE TYPE 36RX
CROSS BAR DETAIL TYPE 36RX GRATE (WELDED STEEL)
BASIS FOR Misc IRON AND STEEL FINAL PAY WEIGHTS FOR DRAINAGE INLETS
GRATE BAR SPACING TABLE
STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION
GRATE DETAILS No. 2
NO SCALE
D77B

G2 CONSTRUCTION, INC.

GITS™ Drop-In CPS

Grated Inlet Trash Screen



State Water Board Certified
FULL CAPTURE SYSTEM

G2 GITS™ grated inlet trash screen is a Full Capture System with 5mm perforations.

- Made from 304 Stainless Steel for extended life.
- Fits under any size inlet grate.
- Custom designed, fabricated & fitted to each grated inlet. *"Made in California, USA"*
- Sized to meet or exceed 1-year, 1-hour storm*.
- Professionally installed by G2 or by the customer.

Recommended for grated inlets.











info@g2construction.com
714.748.4242

www.G2construction.com
DBE, MBE & SBE Certified

Santa Ana
California

CONSTRUCTION, INC.

GITS™ Drop-In CPS

Grated Inlet Trash Screen

FULL CAPTURE SYSTEM Certified by the CA State Water Board & Regional Water Quality Control Boards

GITS™ Under Grate Trash Capture Device

Function:

- Captures all pollutants 5mm and larger that enter the inlet through the grate.
- Meets CA State Water Board trash regulation Track 1 requirements.
- Easy to install, clean and maintain.
- Pollutants prevented from exiting the inlet:
  - Primary: plastics (food containers, bags, bottles, straws); trash (paper, cigarette butts, cans); vegetative debris (leaves, branches, landscaping); other all other objects.
  - Secondary: pollutants absorbed by or attached to the Primary pollutants. Including from vehicles (hydrocarbons, fluids, copper, cadmium, zinc, tires, etc.), pathogens / bacteria, pesticides, nutrients, organic compounds, sediment toxicity, etc.

Design, Flexibility, & Approval:

- Custom designed and fabricated for each inlet and its unique features. Fits any grated inlet.
- Approved by State Water Board, Orange County DPW, OCTA, and agencies everywhere.

Material & Fabrication:

- Made of 304 stainless steel; 14 gauge with 5mm holes.
- *"Made in California, USA"*

Value:

- Low initial capital investment relative to other storm water quality BMPs. Lower long-term and total lifetime costs vs. any water quality BMP or taking no action.
- Requires no replacement filters or parts.

Public Outreach:

- Residents aware of the GITS installed in their local grated inlet perceive it to be an environmental benefit and demonstrates an environmentally conscious community.

info@g2construction.com
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Santa Ana
California

CONSTRUCTION, INC.

GITS™ Drop-In CPS

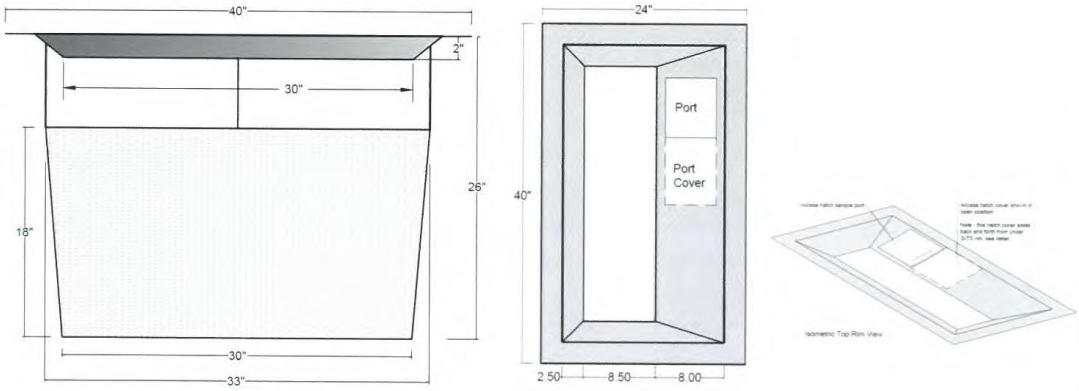
Grated Inlet Trash Screen ***FULL CAPTURE SYSTEMS***

Sample Drawings: G2 GITS™ for Inlets with Grates

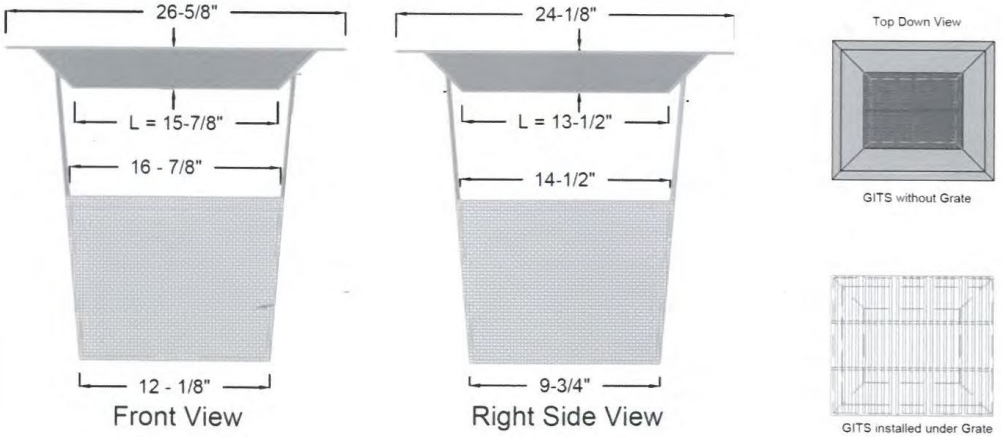
Certified Full Capture Systems – California State Water Board

5mm Perforated Screens, Type 304 Stainless Steel

G2 GITS 4024-Port with Vector Control Access



G2 GITS 2624



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714.748.4242
www.G2construction.com
DBE, MBE & SBE Certified
Santa Ana
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G2 CONSTRUCTION, INC.

GITS™

Grated Inlet Trash Screen

CA State Waterboard Certified *FULL CAPTURE SYSTEM*

SIZES & MODELS

GITS™ Standard Models for Grated Inlets

Model #	Grate Length (in)	Screen Width (in)	Depth (in)	GITS Description
GITS 4024	40	24	custom	Rectangular top rim
GITS 4024-Port	40	24	custom	Rectangular top rim; with Vector Port
GITS 2624	26	24	custom	Rectangular top rim
GITS 2624-Port	26	24	custom	Rectangular top rim; with Vector Port
GITS 24R			custom	Circular top rim; 24" diameter

GITS™ Custom Design

Different sized grates. Custom design.

Irregular Inlets. Custom design.

STATEWIDE TRASH COMPLIANCE **April 2023**

TRASH DISCHARGE DESIGN STUDY

Manufactured and Installed Exclusively by:

G2 Construction, Inc.

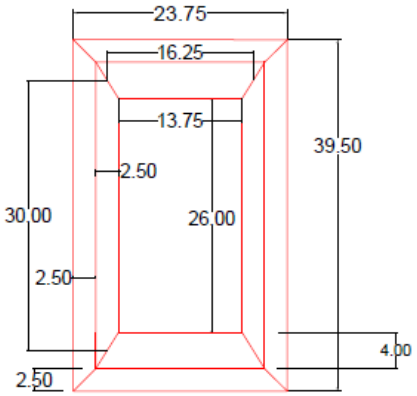
Office (714) 748- 4242

info@g2construction.com

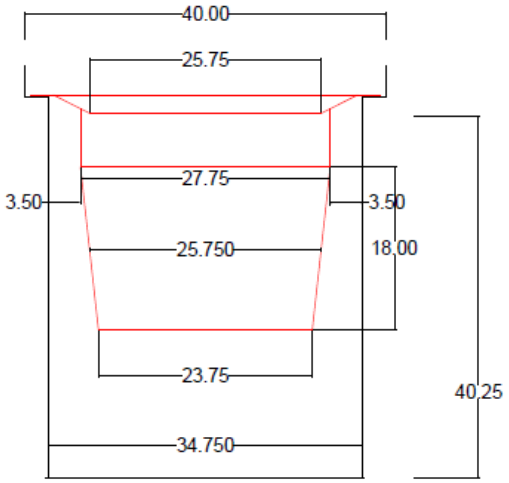
CA Lic. # 801253 A, C-8, C-60

1352 E. Borchard Avenue

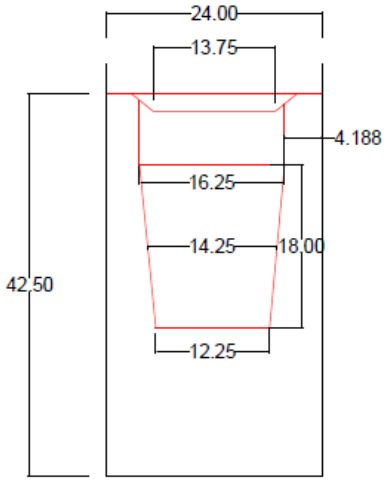
Santa Ana, CA 92705



Top View



Side View



End View

This GITS profile covers a Caltrans profile 24" x 40" grated CB

The top rim dimensions were optimized to provide maximum water entry into capture basket. The entry opening = 2.48 sq. ft. The 6" vertical by pass at top of basket = 3.66 sq. ft., The horizontal overflow along top of basket adjacent to interior walls = 2.70 sq. ft.

The horizontal overflow pass through perimeter along the top of the debris basket to the interior CB walls is 9% greater than the entry point.

This profile optimizes the entry and overflow pass throughs.

The debris basket for this profile = 3.82 cu. ft.

Estimating debris weight at 30 lbs per cu. ft. = 115 lbs of debris + GITS weight of 29.47 lbs = total weight at 183.47 lbs.

This basket has 12 sq. ft of 5mm perforated screen. For a non-blocked surface this will provide 6 sq. ft. of treatment surface providing treatment up to 16 CFS.

Assembly Material Information

Rim weight at 16 gauge = 4.35 sq. ft. = 10.96 lbs

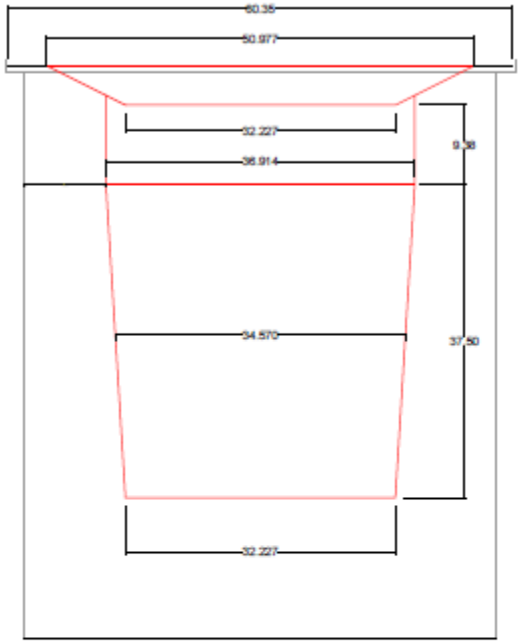
¼" round bar....22' at .167 lbs per l.f. = 3.67 lbs

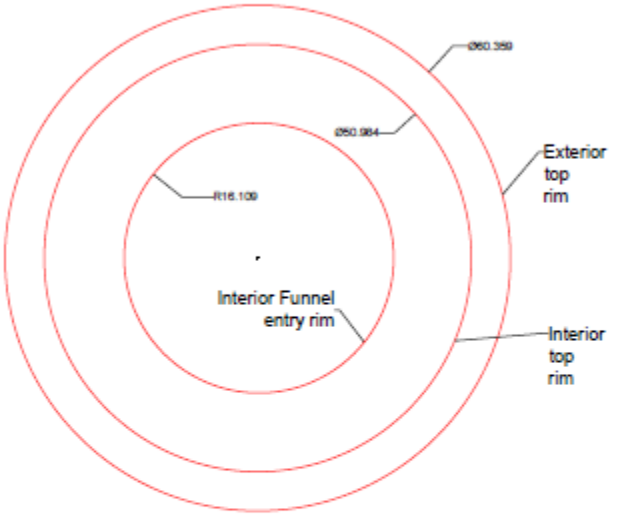
304 SS 5 mm perforated screen = 14.8 lbs

total weight.....= 29.47 lbs.

Drawing not to scale 11/7/2019 jra

Manufactured and Installed Exclusively by:
G2 Construction, Inc.
Office (714) 748- 4242
info@g2construction.com
CA Lic. # 801253 A, C-8, C-60
1352 E. Borchard Avenue
Santa Ana, CA 92705





This GITS profile covers a Caltrans Circular 40" diameter grated inlet drain.

The top rim dimension is optimized to provide maximum water entry into capture basket. The entry opening = 2.31 sq. ft. The 6" vertical by pass at top of basket = 3.09 sq. ft., The horizontal overflow along top of basket adjacent to interior walls = 3.90 sq. ft.

The horizontal overflow pass through perimeter along the top of the debris basket to the interior CB walls is 69% greater than the entry point.

This profile optimizes the entry and overflow pass throughs.

The debris basket for this profile = 5.33 cu. ft.

Estimating debris weight at 30 lbs per cu. ft. = 160 lbs of debris + GITS weight of 44.15 lbs = total weight at 204.15 lbs.

This basket has 13.90 sq. ft of 5mm perforated screen. For a non-blocked surface this will provide 6.95 sq. ft. of treatment surface providing treatment up to 18.85 CFS.

Assembly Material Information

Rim weight at 16 gauge = 7.50 sq. ft. = 18.90 lbs

304 SS 5 mm perforated screen
16 sq.ft = ...25.25 lbs

total weight.....= 44.15 lbs.

Drawing not to scale 11/7/2019 jra



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